IWILL® H4204 SERIES™

4-Way Server System
Hardware Installation Guide

FB21201600

Preface

Operation is subjected to the following two conditions

1. This device may not cause harmful interference
2. This device must accept any interference received, including interference that may cause undesired operation.

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1. Reorient or relocate the receiving antenna
2. Move the equipment away from the receiver
3. Plug the equipment into an outlet on a circuit different from that to which the receiver is connected
4. Consult the dealer or an experienced radio/television technician for additional suggestions

You are cautioned that any change or modifications to the equipment not expressly approve by the party responsible for compliance could void your authority to operate such equipment.

This device complies with Part 15 of the FCC Rules.

CE Compliance Statement

Notice for Europe (CE Mark) This product is in conformity with the Council Directive 89/336/EEC, 92/31/EEC (EMC).

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Chapter 1 Getting Started

Congratulations on your purchase of the H4204 server system. The H4204 server system supports up to sixteen memory DIMMs (four for each processor installed) accommodating up to 64 GB of memory capacity using registered PC3200/2700/2100 ECC DDR memory modules.

The H4204 server system is designed for flexibility and expandability, which is achieved via a modular design. The H4204 server system includes one CPU main board, one I/O module board with two 64-bit/133MHz-expansion slots and two x16 PCI-express expansion slots by x8 PCI-express lanes, and one Hyper Transport bridge via HTX Pro technology to join the modules together. The H4204 server system also features with an advanced cooling system to guarantee reliability and performance.

Additional features such as onboard Broadcom® 5721 Gigabit Ethernet controllers and onboard ATI® RageXL video controller with 8MB external memory provide high system capabilities that meet a wide range of demanding server applications.

1-1 Packing list

Remove all items from the box and make sure you have these following items:

1.	H4024 server system
2.	The IWILL® H4024 server system hardware installation guide
3.	One power cord
4.	Four CPU heat sinks
5.	One set of system side rails
6.	UMS user's guide and installation CD
7.	One bezel for covering front panel

Please check the quantity of cables and module boards that assembled inside the H4204 system.

Cable

- 1 x KVM cable
- 1 x BMC cable
- 1 x LAN cable
- 1 x USB cable
- 1 x Power LED panel cable
- 1 x Rear IO board cable
- 1 x IDE cable for CD-ROM device

Board

- 1 x QK8S Board
- 1 x GEIO-E Board
- 1 x HTCB Board
- 1 x BMC Card
- 1 x FCB Card
- 1 x CD-ROM backplane

IMPORTANT

If there are any missing parts, please contact your retailer immediately.

1-2 Operating Environmental Requirements

To ensure the reliability and performance of H4204 server, please maintain the operating environment described below:

1. The ambient operating temperature is 0°C to 40°C
2. The relative humidity of operation is 10% to 85% non-condensing.

Be aware of the airflow for H4024 server! The H4024 server system uses forced direct-airflow to cool the system. The above operating conditions should be maintained for reliable operation. In order to avoid conditions which may lead to overheating, please do not let heated exhausted air from other equipment enter:

1. The front of the rack or the cabinet
2. The access panels of the server.

Leave your system in the shipping crate at its final destination for 24 hours in the environment where you will set it up. This is to prevent thermal shock and condensation. To minimize the chance of system failure, use the server within the optimal temperature and humidity ranges as follow:

1. The optimize ambient temperature of operating is required as 21°C to 23°C
2. The optimize relative humidity of operating is 45% to 50% non-condensing.

1-4 The Complete Components of H4204 Server System

Description	Model Name
2U Chassis	2U 4-way server chassis including 700W Power
Main Board	QK8S -- Quad Opteron™ Server Board
Modular I/O board	GEIO-E
HTX Pro board	HTCB
IPMI Accessory	BMC 1.5 Card

1-5 Before Powering on The System for The First Time

H4204 is provided with 700-Watt power supply unit. Locate and connect the AC power cords to the system and an AC power source. There is one power unit in the right of H4204. Please see the below illustrations to install your power system.

NOTE

As the figure 1, you must install the power cord into the power module before you powering on the system.

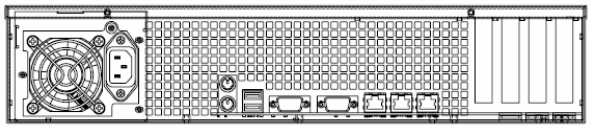


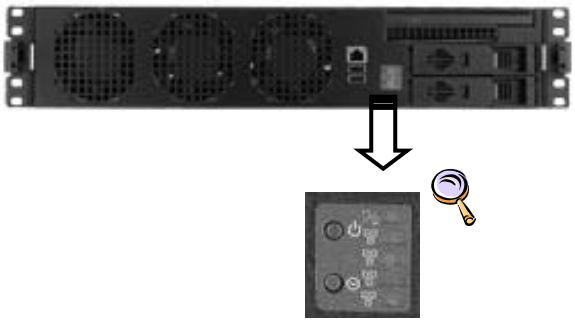
Figure 1

1-6 Activating The System

After connecting the power cord to the system and AC source, the system can be powered on by pushing the power on button show below.

Turn On/Off

Reset



1-7 One Last Check

Before you power on the system for the first time, it is helpful to avoid any problem by performing one last check. Make sure AC power is installed and that no parts have dropped down into the system.

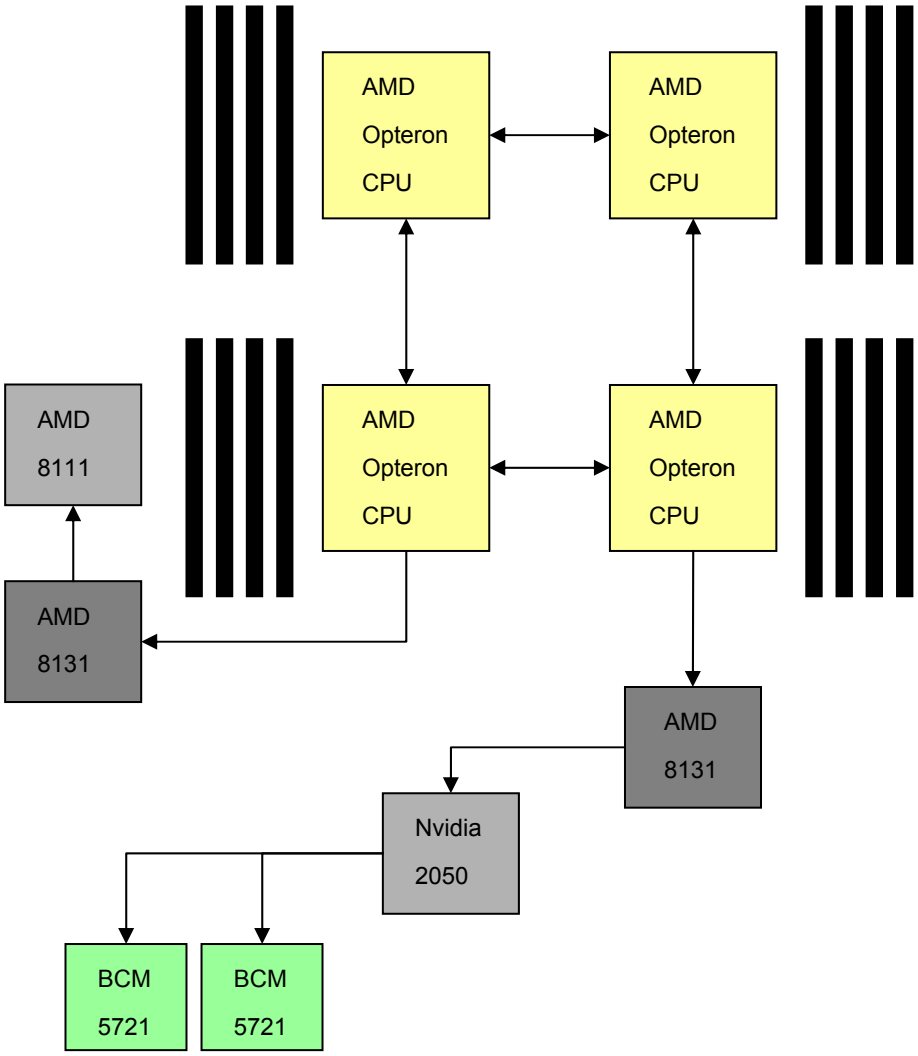
Chapter 2 System Overview

This chapter covers the installation of the system, cabling and system layout.

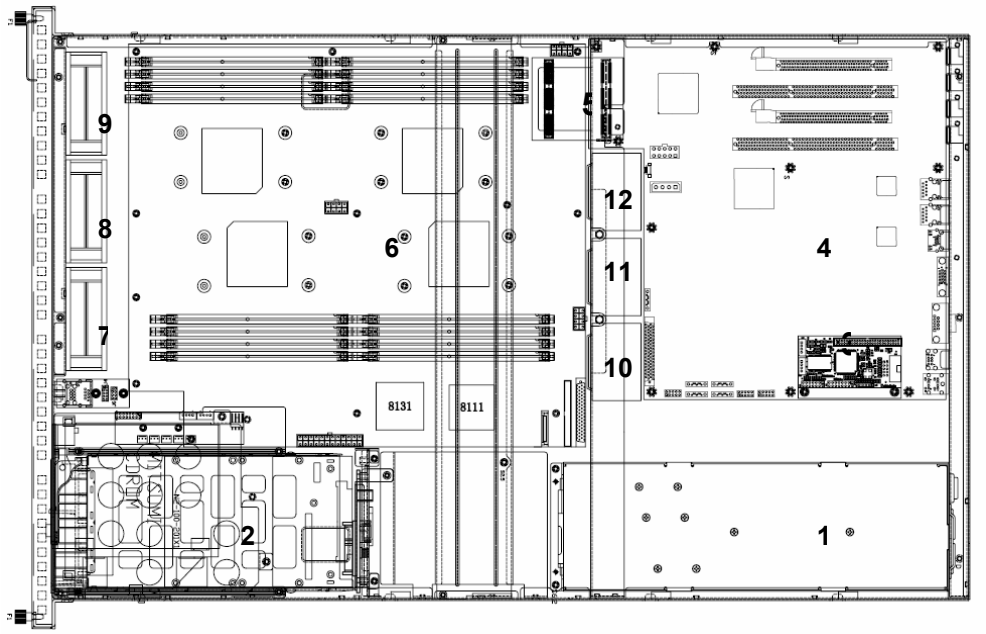
The system specification section will cover the most detail features for the CPU board, IO board, and chassis. This chapter also contains the specifications for the supported processors and memory required for this system.

The cabling section will cover the connection and installation for the related devices such as the serial connector, D-sub 15-pin VGA connector, USB connectors, Ethernet Gigabit connectors, and PS/2 connectors on the back and front panels.

2-1 H4024 Server System Block Diagram



2-2 H4204 Server System Overview & Specification

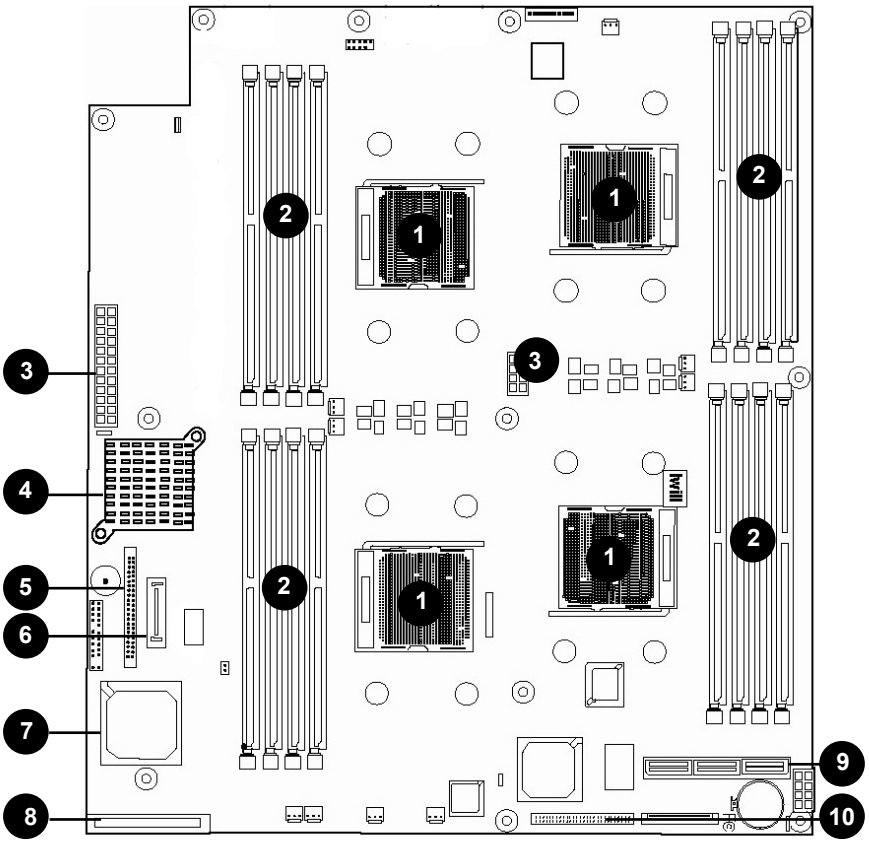


1	700 W Power Supply Unit
2	2 x 3.5” SATA HDD and 1 x slim-type CD-ROM bay
3	IWILL BMC Card
4	GEIO-E IO Board
5	HTX Pro Board (HTCB)
6	QK8S Main Board
7	Front side cooling fan (shown Fan 10 in BMC)
8	Front side cooling fan (shown Fan 9 in BMC)
9	Front side cooling fan (shown Fan 8 in BMC)
10	Middle cooling fan (shown Fan 5 in BMC)
11	Middle cooling fan (shown Fan 4 in BMC)
12	Middle cooling fan

System Specification:

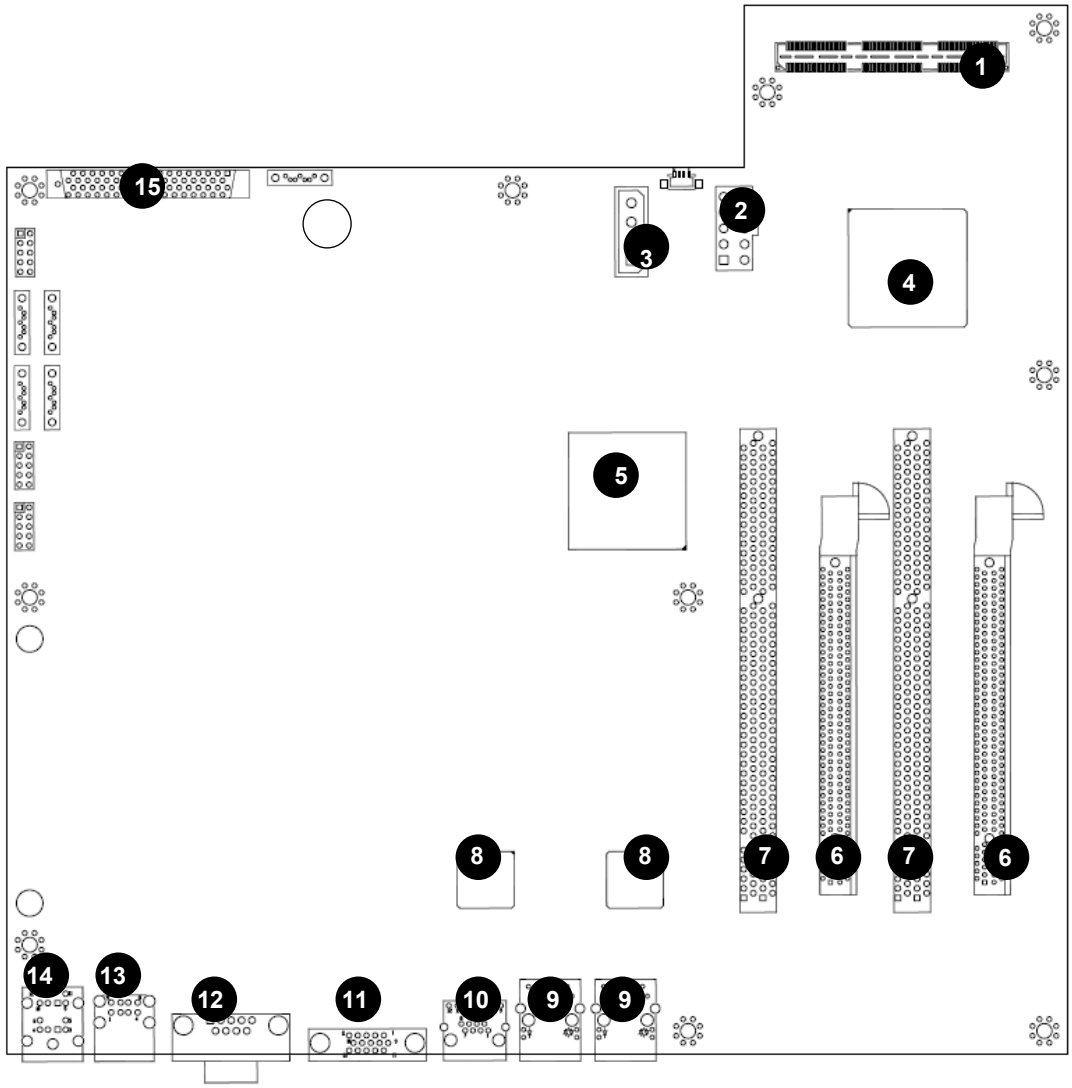
CPU Type	● Support quad AMD Opteron™ processor 800 series ● Support dual core processor
Memory Type	● Support total 16 ECC/REG SDRAM memory DIMMs ● Support DDR400/333/266 memory module ● Support 2rank/4rank memory module ● Support up to 64GB memory capacity
Storage	● Support 2 x 3.5” SATA hot-swap HDD bays ● Support 1 x slim type CD-ROM bay ● Support 1 x slim type FDD bay
IO Expansion	● Support 2 x PCI-Express X16 slots in X8 mode ● Support 2 x PCI-X 64bit 133/100MHz slots ● Support low profile add-on cards installation only
System Cooling	● 3 x 8032 8000RPM fans in front ● 3 x 60xx xxxxxRPM fans in middle
Power Supply	● 700W EPS 12V power
Rear IO	● 2 x USB ports ● 3 x Ethernet ports (one port for system management) ● 2 x PS/2 ports ● 1 x COM port ● VGA ports x 1
Front IO	● 2 x USB ports ● Power on/off button ● Reset button ● 2 x LAN LED ● 1 x HDD LED
System Dimension	● W: 19” x H: 3.5” x D: 28”

2-3 Quad Opteron™ Processor Board, QK8S Layout



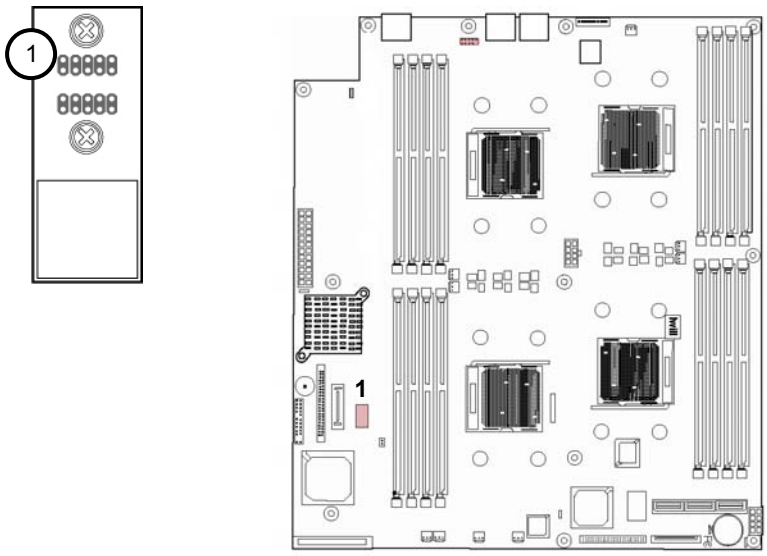
1	AMD Opteron™ Processors	**5**	IDE Connector	**9**	HyperTransport connector
2	Reg. ECC SDRAM **Only**	**6**	Slim Type CD-ROM Connector	**10**	BMC Connector (connected with BMC card)
3	24-pin + 2 8-pin EPS Power	**7**	AMD 8111 IO Control Hub		
4	AMD 8131 PCI-X Chip	**8**	SCSI port to I/O board **Only**		

2-4 Modular I / O Board, GEIO-E Layout



1	HyperTransport connector	**7**	PCI-X 64bit 133/100Mhz slot	**13**	Two USB ports
2	10pin power connector	**8**	Broadcom 5721 GbE controller	**14**	Two PS/2 ports
3	4pin power connector	**9**	10/100/1000 GbE NIC	**15**	SCSI port to Mainboard **Only**
4	AMD 8132 tunnel chip	**10**	10/100 NIC for management		
5	Nvidia nForce4 Pro 2050 chip	**11**	One VGA port		
6	PCI-Express X8 in X16 slot	**12**	One Com port		

2-5 Front Board Layout

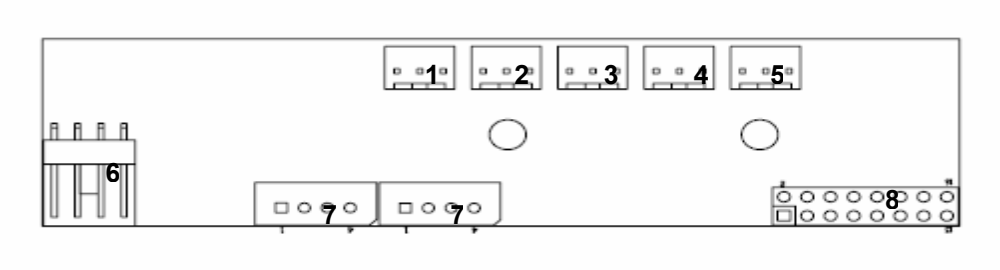


- USB Port

  USB 1.1 has a maximum bandwidth of 12Mbs, providing a marked improvement in device transfer speeds between your computer and a wide range of simultaneously accessible external Plug and Play peripherals. You can connect or disconnect USB cables when the system is turned on.

2-7 Fan Board & BMC Card Layout

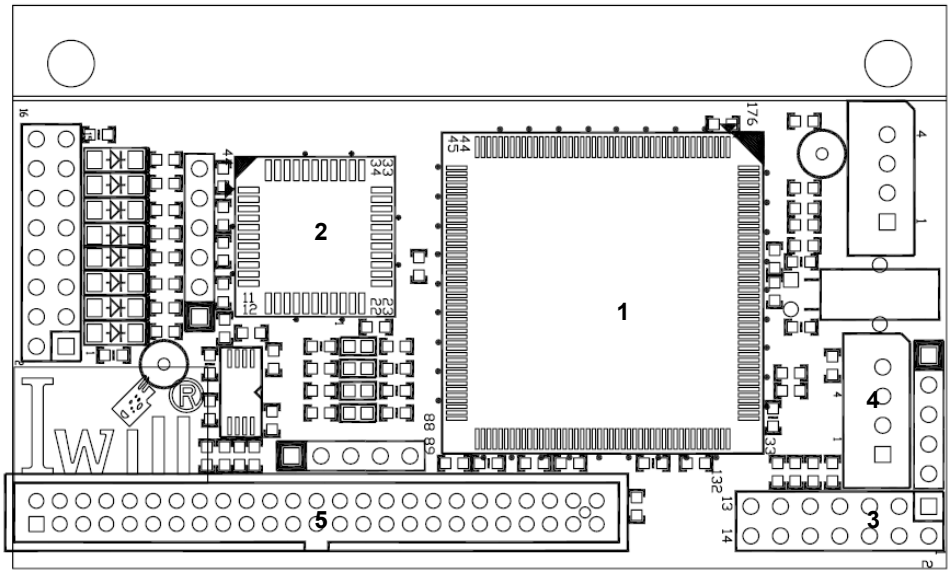
In H4204, there're two boards for system configuration. There is one fan board to provide the power and fan monitor function of H4204; another is one BMC card for system management utility.



Fan Board Layout

1	3pin fan connector (Fan 6 shown in BMC)	**5**	3pin fan connector (Fan 10 shown in BMC)
2	3pin fan connector (Fan 7 shown in BMC)	**6**	Power connector of fan board

3	3pin fan connector (Fan 8 shown in BMC)	**7**	SM Bus connector (connected with BMC card)
4	3pin fan connector (Fan 9 shown in BMC)	**8**	Jumper setting



BMC Board Layout

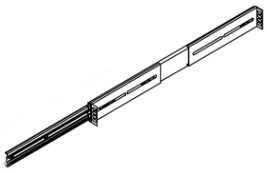
1	NS PC87435 BMC chip	**4**	SM Bus connector (connected with fan board)
2	XILINX XC9536XL	**5**	BMC connector (connected with QK8S MB)
3	JTAG for BMC card debug		

Chapter 3 System Installation

This chapter mainly covers how to install your system, H4204, to your rack housing on the server room. It will describe how to install the slide rail.

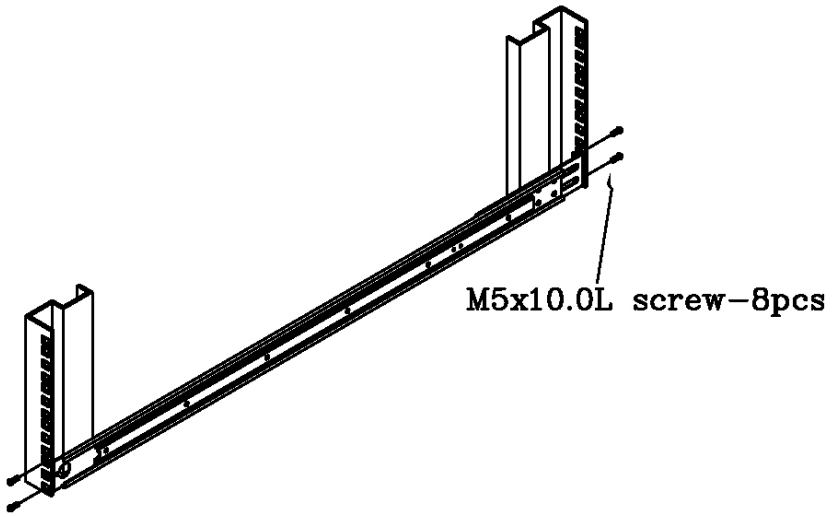
This section also introduces the necessary parts of rack-mount kit of H4024 server system. Refer to the following illustration for the H4024 server system installation.

3-1 Introduction of the Necessary Parts

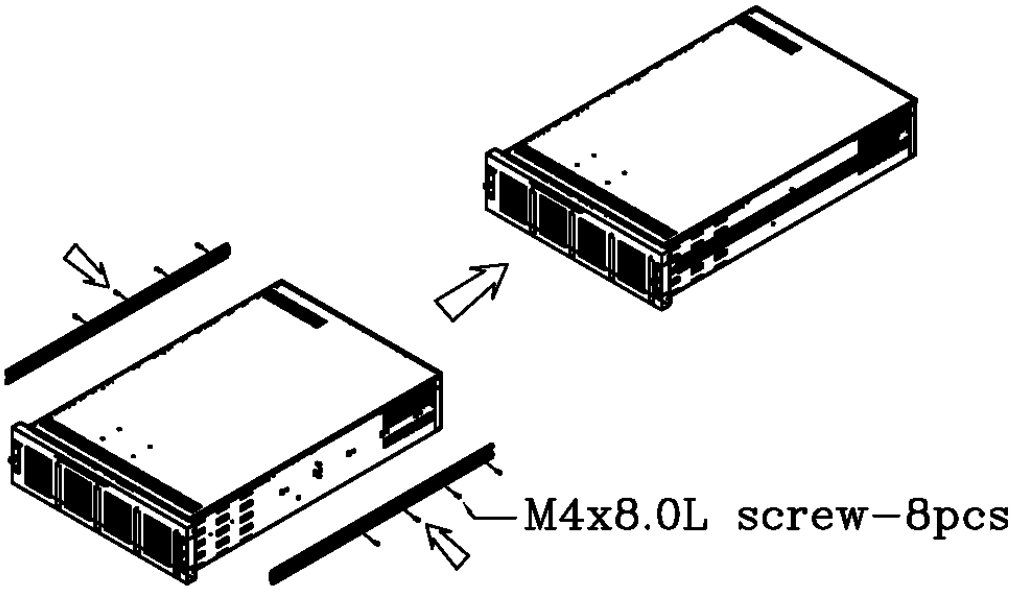
	2 x H4024 server system Mounting Channel
	2 x Inner Rails
	4 x “L” Shaped Bracket
	1 x H4024 server system

3-2 Installation Procedures

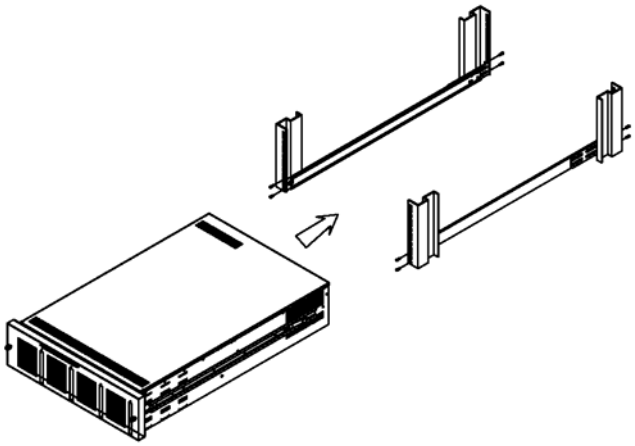
1. Mount L shape and external rail to rack frame.



2. Assemble inner rail to chassis



3. Insert the chassis into cabinet



4. Finish the installation

Chapter 4 Hardware Installation

This chapter covers processor and memory installation and hardware configuration.

4-1 Hardware Installation Procedures

Installation procedures will be broken down into six major parts.

Step 1: Jumper setting

Step 2: Install memory (DDR memory modules)

Step 3: Install AMD Opteron™ Processors

Step 4: Attach cables to connectors

Step 5: Install expansion cards

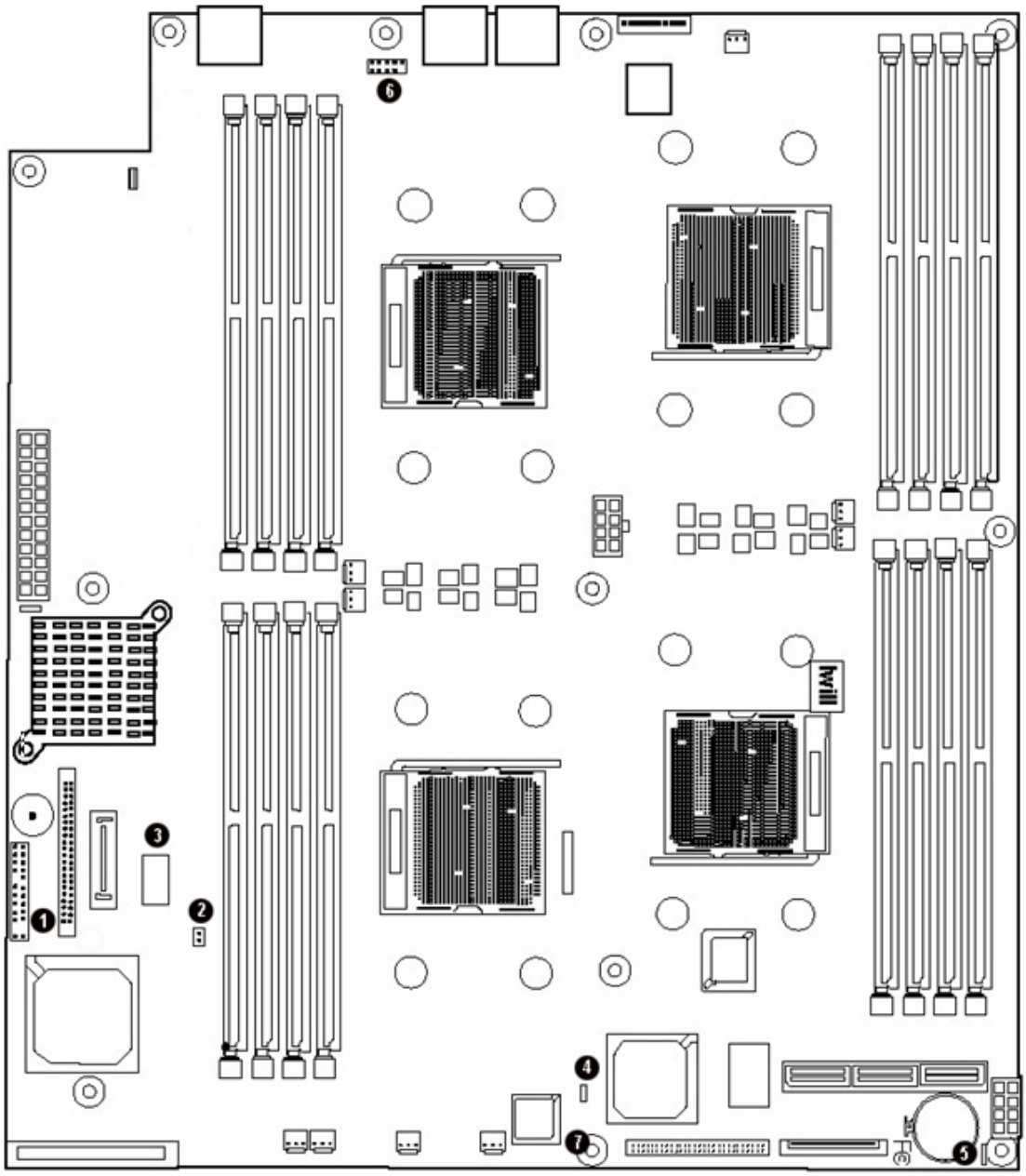
Step 6: Connect AC power

WARNING

This H4024 server system contains sensitive electronic components that can be easily damaged by static electricity. Follow the instructions carefully to ensure correct Installation and to avoid static damage.

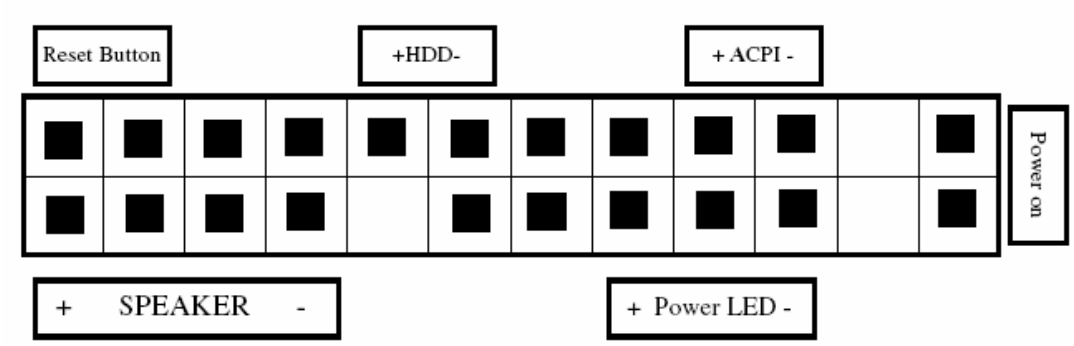
4-2 Jumper Setting of QK8S Mainboard

This section covers the jumper setting. Refer to the following illustration for the location of the jumpers.



1	Front Panel Switch Header	**5**	Clear CMOS Header
2	Case Intruder	**6**	Onboard 10/100 LAN Header
3	USB Header	**7**	LAN LED Header
4	VGA Jumper		

4-2.1 Front Panel Switch Header



Reset Button (2-pin RST)

This 2-pin connector connects to the chassis-mounted reset switch for rebooting your computer without turning your power switch off and on. This is a preferred method of rebooting your system to prolong the life of your system's power supply.

Hard Disk Activity LED (2-pin HDD_LED)

This connector supplies power to the chassis's HDD/IDE activity LED. Read and Write activity by devices connected to the Primary or Secondary IDE connectors will cause the front panel LED to light up.

ACPI LED

ACPI function allows the system to enter or resume from the Suspend mode. If your system chassis does not have this button, the same function may be performed from your OS; if it is supported.

Power On Switch

This switch connects to the system's Power button allowing you to power on and off the system. You can configure the system to use the keyboard or mouse to power-on the system. You can also configure the system to respond to power restoration after a power outage occurs. These functions can be configured by making appropriate settings in the Integrated Peripherals submenu ("Super IO Device" field) of the BIOS.

Speaker Connector

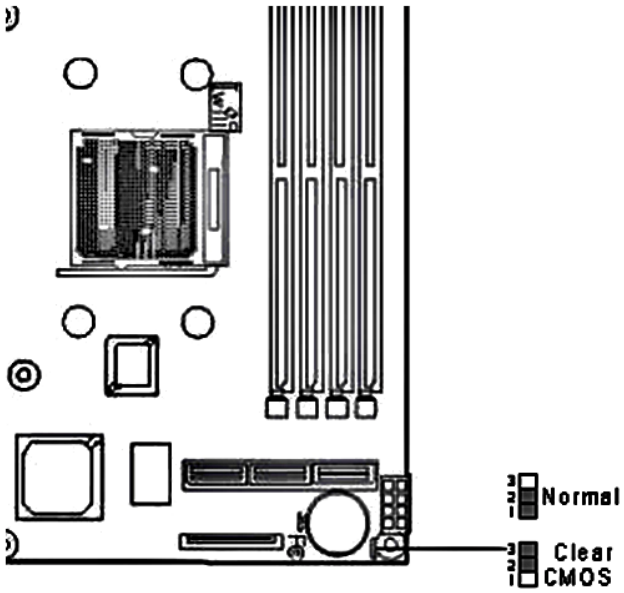
This connects to the PC speaker installed in the system chassis.

Power LED Connector

This connector connects to the system's Power LED. When the system's power is on, this LED will light.

4-2.2 Clear CMOS Header

The onboard button cell battery powers the CMOS RAM. It contains all the BIOS setup information. Normally, it is necessary to keep the jumper connected to pin1 and pin2 (Default) to retain the RTC data as shown below.



To help the customer clear CMOS easily, there is one attached Clear CMOS cable inside the system. Please kindly refer to the attached file.

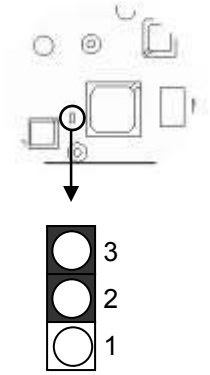
Follow these instructions to clear the CMOS RTC data:

1. AC off.
2. Short pin2 and pin3 with a jumper for a few seconds.
3. Replace the jumper on pin1 and pin2.
4. Turn on your computer by pressing the power-on button.

5. Hold down <Delete> during boot and select either the <Load Optimal Defaults> or <Load Failsafe Defaults> option in the selection "Exit". Then re-enter BIOS setup to re-enter user preferences. Refer to Chapter 5 BIOS SETUP for more information.

4-2.3 VGA Jumper

This header lets you set your VGA port function. You can choose enable or disable this function or not.

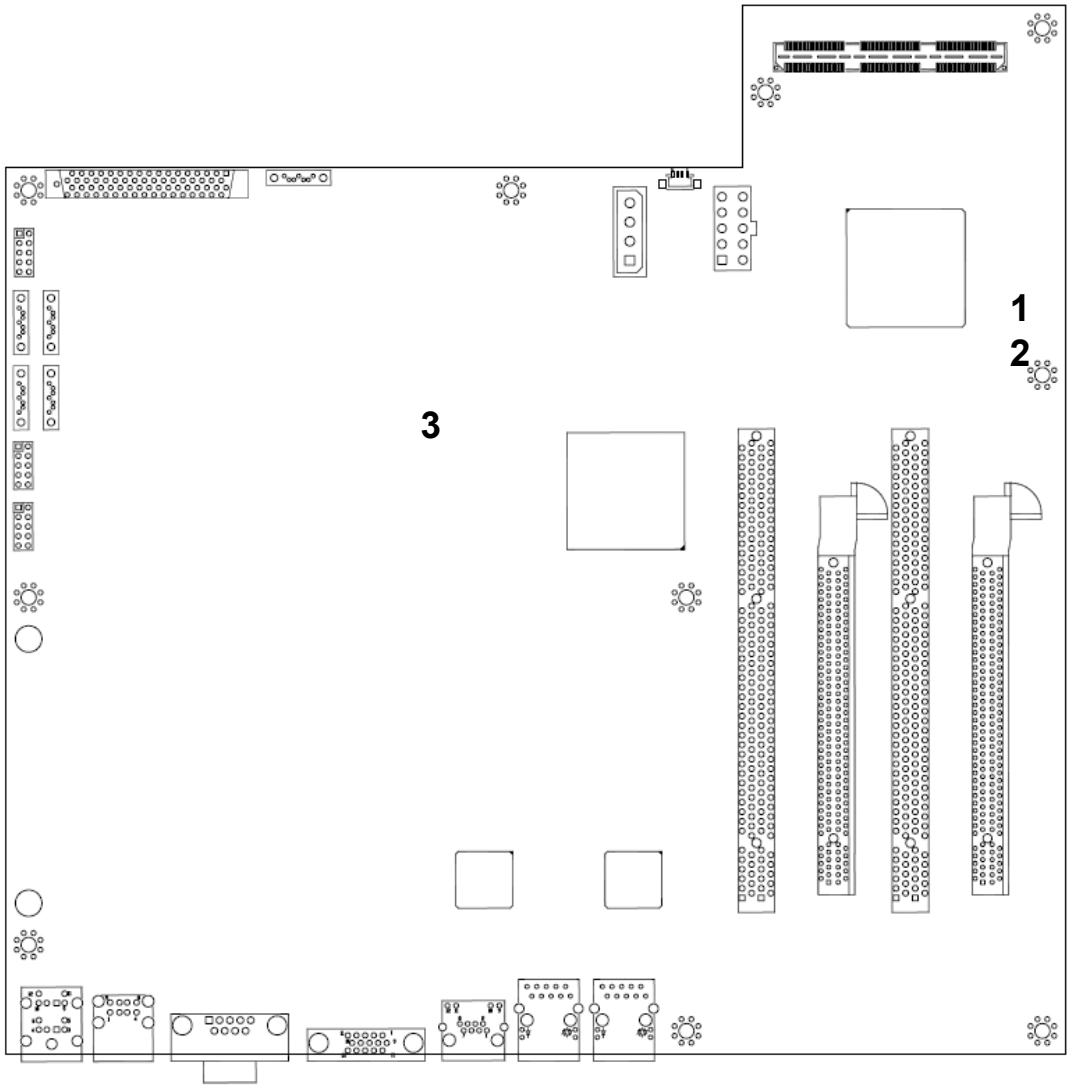


1-2	2-3
Enable	Disable

4-2.4 USB 1.1 Ports and Header

H4204 supports USB 1.1 ports. USB 1.1 ports locate at the front and rear panel both. USB 1.1 supports transfer rates of up to 12MB/s.

4-3 Jumper Setting for modular IO board



1	J1 Pin Header, the PCI-X speed for ● 1-2 133Mhz ● 2-3 100Mhz	**3**	J1 Pin Header, the clock buffer setting ● 1-2 test mode ● 2-3 normal setting (default setting)
2	J2 Pin Header, the PCI-X speed for ● 1-2 133Mhz ● 2-3 100Mhz		

4-4 Install Memory

The system main board uses Dual Inline Memory Modules (DIMM). Two pair banks are available; each bank supports one CPU with Hyper Transport Technology. The memory DIMMs accommodates PC2100/2700/3200 (DDR266/DDR333/DDR400) and Double Data Rate Memory (DDR) memory modules in 128MB, 256MB, 512MB, 1GB, 2GB, and 4GB combinations.

WARNING

H4204 SERIES ONLY supports Registered DDR ECC memory.

IMPORTANT

The system main board has strict memory type and timing requirements. Before you purchase DDR (Double Data Rate) memory for using in the system main board, you should contact your local reseller for a recommend list of system memory that has been validated on this system.

This H4204 server system supports only Registered PC3200 /2100 /2700 (DDR400/DDR333/DDR266) compliant modules. You must populate H0 DIMM modules 0~3 before the H1 DIMM modules 0~3.

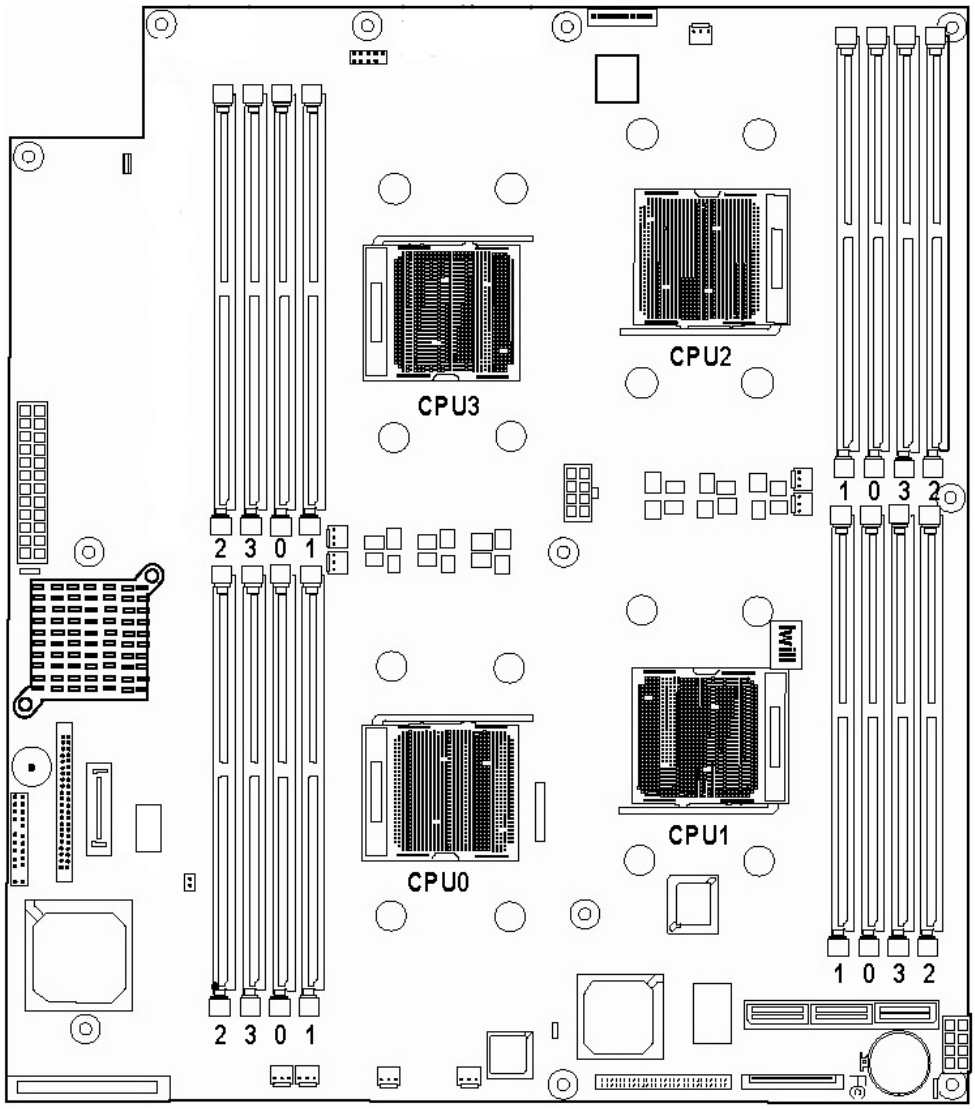
IMPORTANT

To take advantage of the 128-bit interface, you must install DIMMs in pairs of two (2). DIMM slots DIMM0 and DIMM1 are paired, and slots DIMM2 and DIMM3 are paired. If you are only installing two DIMMS into a Memory Bank, it is recommended that you install them in slots DIMM0 and DIMM1 to get the full bandwidth.

Two DDR Modules	**HO DIMM0, HO DIMM1**
Four DDR Modules	**HO DIMM0, HO DIMM1, HO DIMM2, HO DIMM3**

4-4.1 Memory Installation Procedures

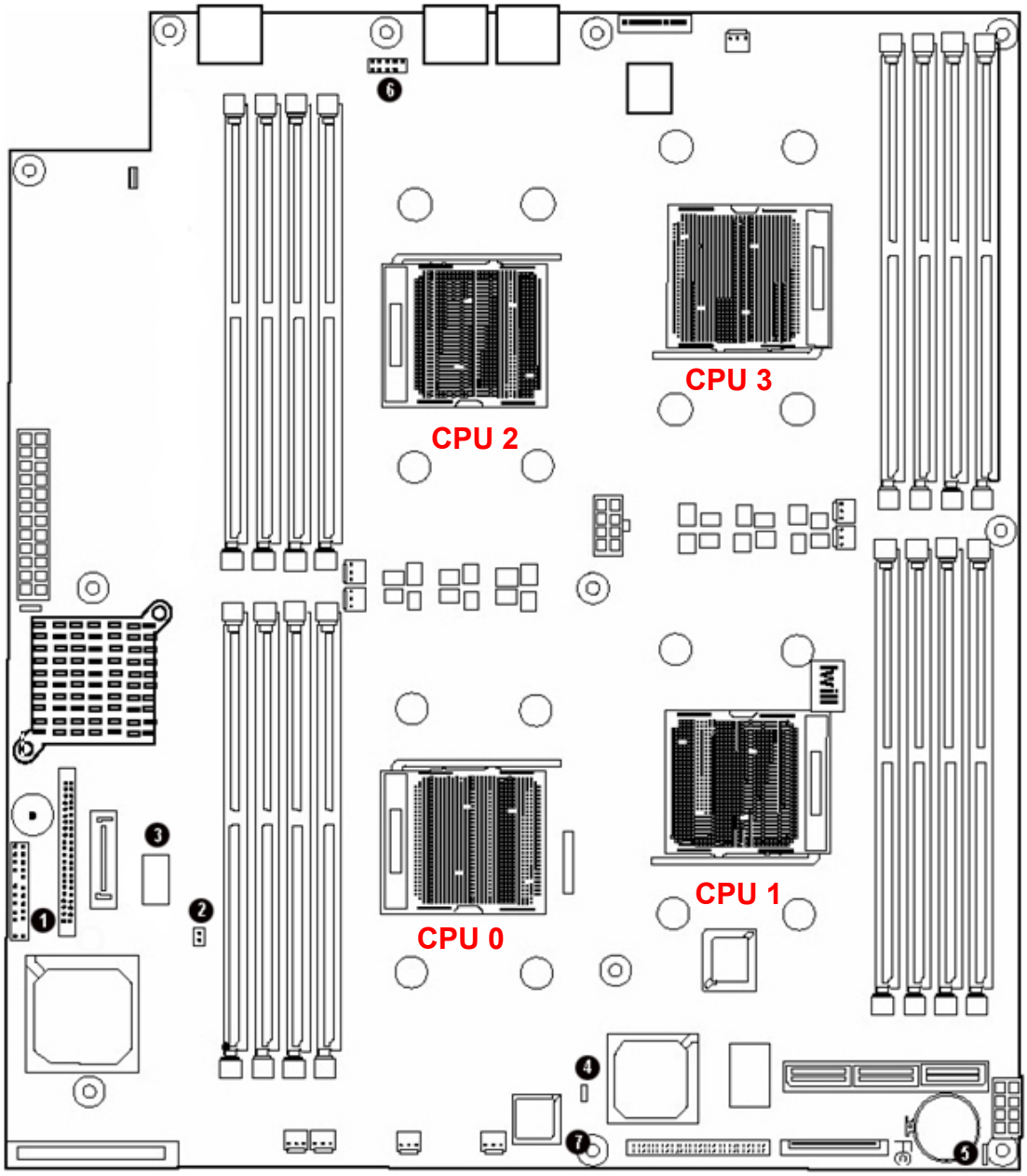
1. Locate the DIMM modules



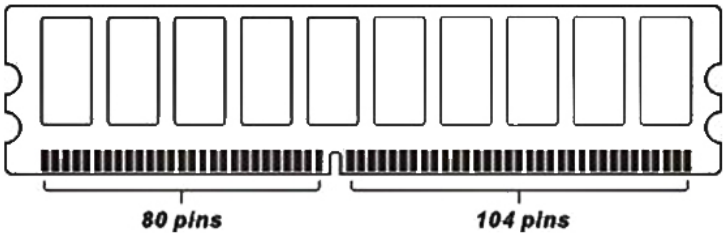
The CPU and memory socket number

IMPORTANT

The above CPU sequences are the number of PCB silkscreen. The CPU sequences of BIOS and server management utility are different and shown in below block diagram.

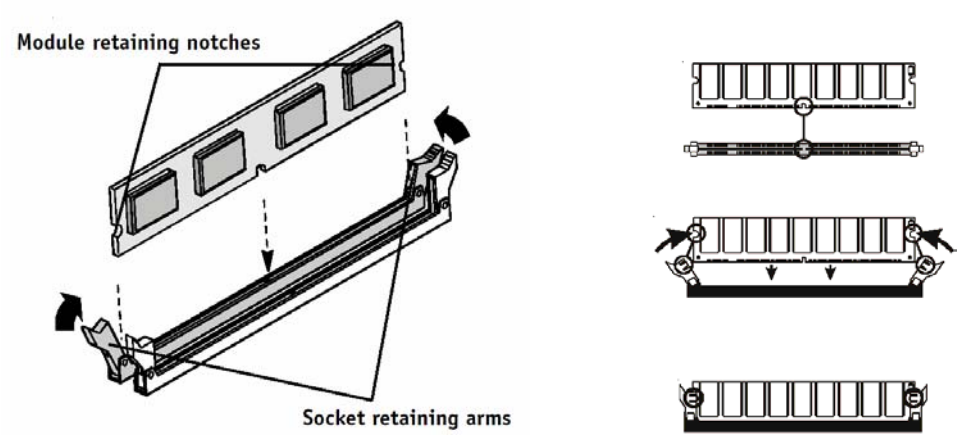


2. Make sure the DIMM's pins are facing down, and check that the pin arrangement on the memory module resembles the one pictured below.



Memory module pin arrangement

3. Insert the module into the DIMM socket and press down evenly on both ends firmly until the DIMM module is securely in place. (The tabs of the DIMM socket will close-up to hold the DIMM in place when the DIMM is properly installed into the socket.)



IMPORTANT

Always populate H0 DIMM socket before installing memory modules in the H1 DIMM sockets.

4-5 Install CPU

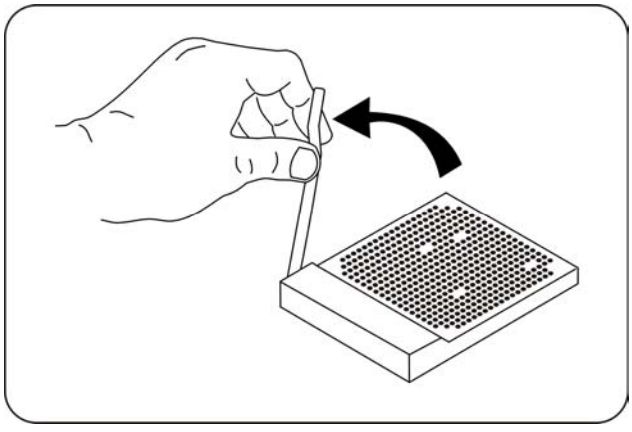
System main board accommodates AMD Opteron™ micro-PGA Socket 940 processors at 1600 MT (Mega Transfer per second). You can install either two or eight processors on H4204 SERIES. When you install more than one processor on one main board, please follow the correct CPU installation sequence. The correct CPU installation sequence is CPU0, CPU1, CPU2, and CPU3.

You must insert a CPU into CPU socket 0 (CPU0) first before installing one in CPU socket 1 (CPU1).

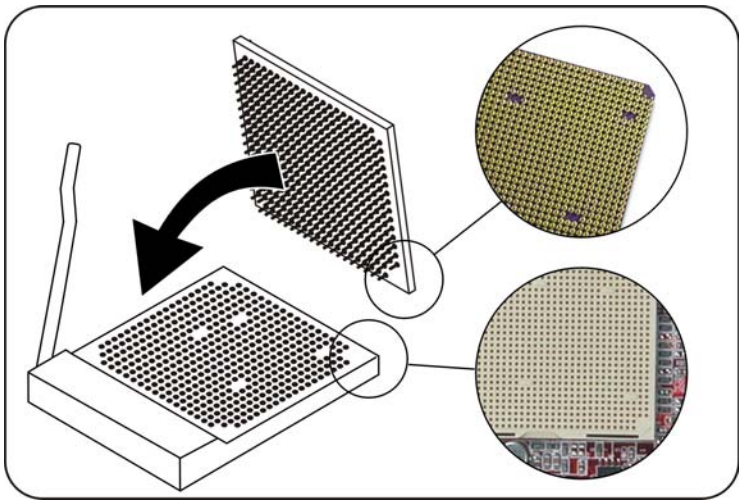
4-5.1 CPU Installation Procedures

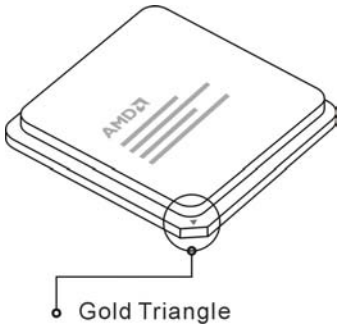
Follow these instructions to install a CPU.

1. The socket locking lever must be raised (Pull out slightly, and then lift up).

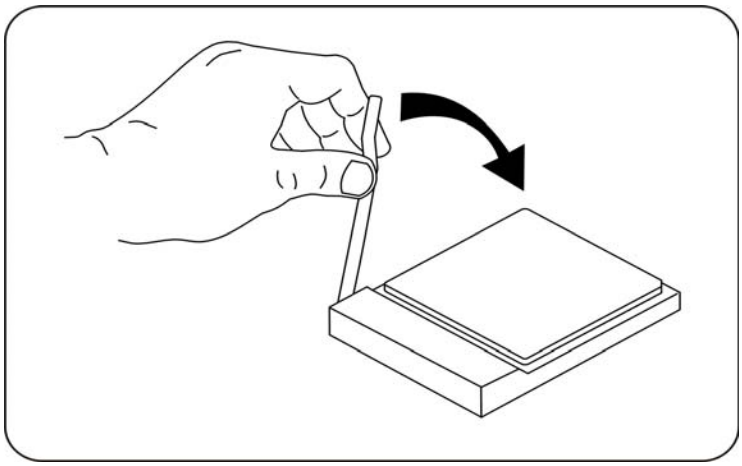


2. Locate the pin 1 of the CPU socket and pin 1 of the CPU. (Marked by a triangular space at 1 corner of the CPU)





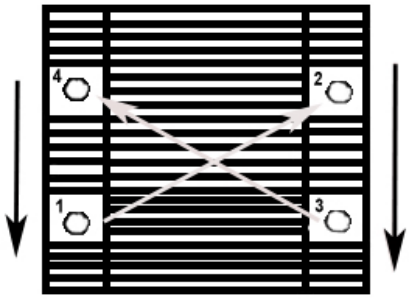
3. Lower the locking lever and latching it into the fully locked position.



4-6 Install CPU Heat Sink

1. Apply thermal grease to the top of the CPU. Please spread thermal grease evenly across the metal heat spreader of the CPU.
2. Mount the CPU heatsink to the top of the CPU and socket as shown in the following illustration.

Secure to the motherboard



The sequence for driving screws

3. Please follow the number sequence to drive in four screws in order to fix the heat sink well. However, please DO NOT tightly drives in them before you finish all the procedures.
4. After you gently drive in all of screws, please keep the heat sink balance. Then, you can tightly drive in them.
5. If you feel the system is overheating, please shut down the system. Make sure whether the heat sinks fix well or not.

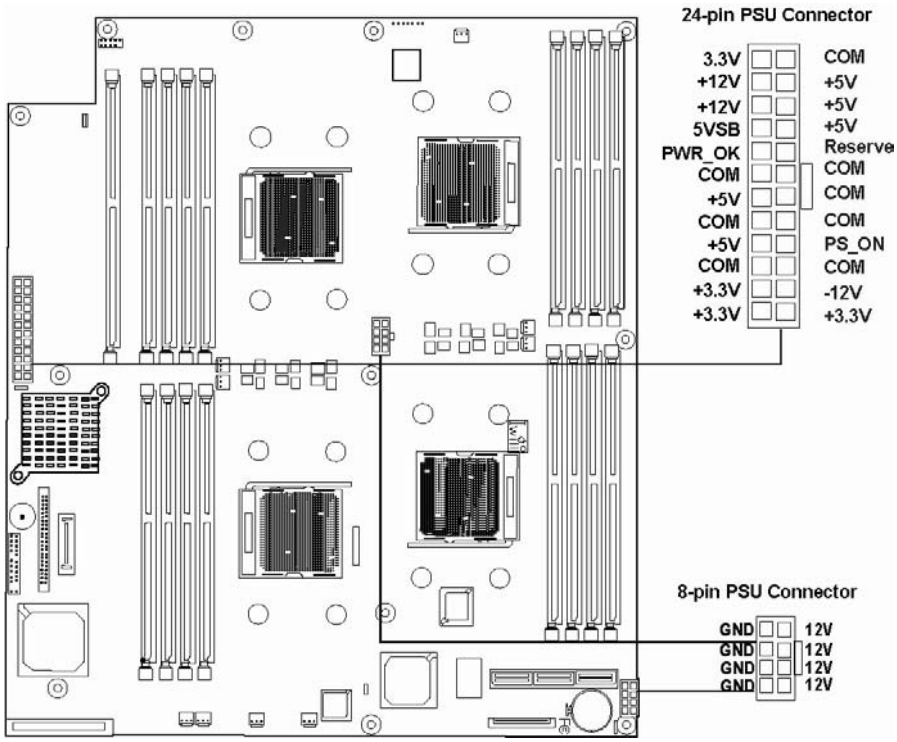
Apply all of the thermal interface material to the center of the processor heater spreader plate.	
Gently put the heat sinks onto the top of CPU.	
Gently drive in the screws	

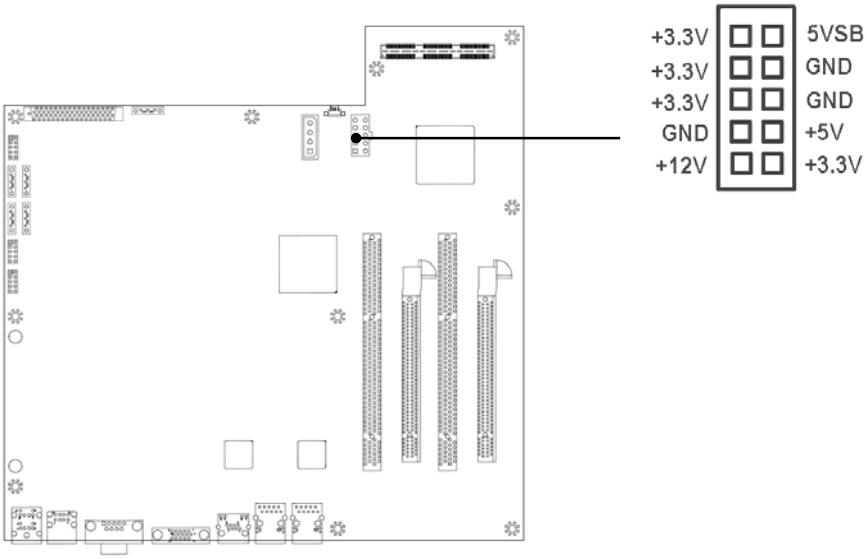
NOTE

Make sure that you use the heat-spreading paste between the Heat sink and the Integrated Heat Spreader of the processors. (Standard package includes one package of thermal paste.)

4-7 EPS Power Supply

These 24-pin connectors connect the server board to the EPS power supply. Find the proper orientation and push down firmly to make sure that the pins are aligned. The 8-pin connector provides a dedicated power supply for the CPUs.





IMPORTANT

IWILL® always recommends our customers use EPS12V Power supplies. For any power damaged, please contact your retailer or IWILL® technicians. H4204 SERIES provides up to 700W from the power supply. This will support most hard drive and peripheral configurations. Always connect all power supply connectors to the motherboard (one 24-pin connector, two 8-pin connectors, one -12V connector, and one 10-pin connector) on main board and I/O board.

4-8 Install Expansion Cards

WARNING

Please power off your power supply completely when adding removing any expansion card or other system components. Failure to do so may cause severe damage to both your motherboard and expansion card.

4-8.1 Expansion Card Installation Procedure

Read the documentation for your expansion card and make any necessary hardware or software setting changes such any jumper configuration.

1. Remove the bracket plate on the slot you intend to use. Keep the bracket for possible future use.
2. Carefully align the card's connectors and press with the riser card firmly.
3. Secure the card on the slot with the screw you removed above.

4-8.2 Assigning IRQs for PCI Expansion Cards

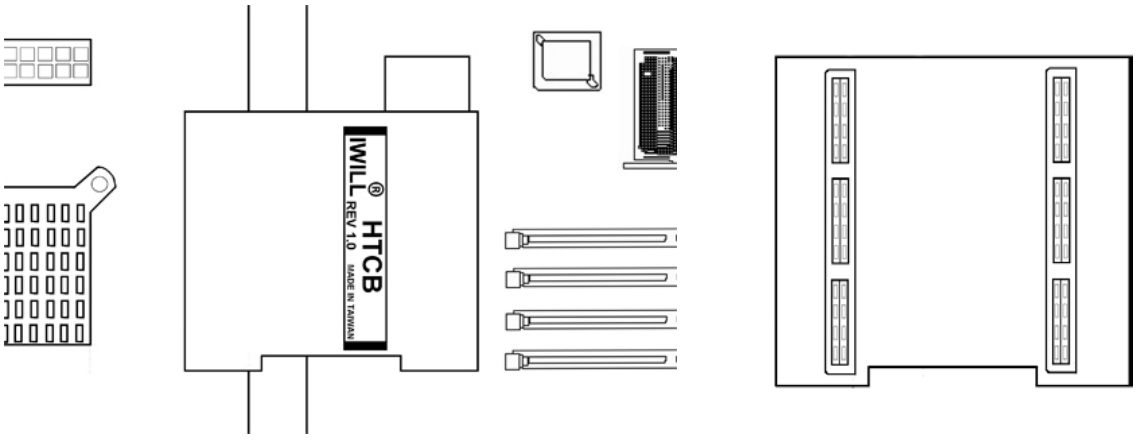
An IRQ number is automatically assigned to PCI expansion cards. In the PCI bus design, the BIOS automatically assign an IRQ to a PCI slot that contains a card requiring an IRQ. To install a PCI card, you need to set the INT (interrupt) assignment. Since all the PCI slots on this motherboard use INTA #, set the jumpers on your PCI cards to INTA.

4-9 HTX PRO Technology

The IWILL® H4204 SERIES consists of several separate boards to form a complete 4-Way AMD Opteron™ processor solution: Modularization of these three boards through IWILL's HTX-Pro™ interfaces allows multiple possible configurations, each able to be optimized for size, thermal, performance or other considerations. The I/O board is connected to the CPU board via a HTX-Pro™ interface. The data between Mainboard and I/O board transfer via the HTX Bridge. The HTX Pro is a revolutionary design using the AMD64 Direct Connect Architecture to its full potential providing infinite possibilities in customization and unparalleled bandwidth access in I/O intensive applications.

4-9.1 HTX Bridge Installation Guide

Please follow the below illustrations. You should firmly push the HTCB board into the connectors between modular IO board and main board.



Front side of HTX Bridge

WARNING

The wrong install direction will lead to system fail or harsh damage.

Chapter 5 BIOS Setup

This chapter discusses the AMI BIOS Setup program built into the ROM BIOS. The Setup program allows users modifying the basic system configurations according to their requirements. This special information is then stored in battery-backed RAM so that it retains the Setup information when the power is turned off.

The AMI BIOS installed in your computer system's ROM (Read Only Memory) is a custom version of an industry standard BIOS. The BIOS provides critical low-level support for standard devices such as disk drives and serial ports.

The AMI BIOS has been customized by adding important, but non-standard, features such as password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

The rest of this chapter is intended to guide you through the process of configuring your system using Setup.

5-1 Starting BIOS Setup

The AMI BIOS is immediately activated when you power on the computer every time. The BIOS reads the system information contained in the CMOS and begins the process of checking out the system and configuring it. After finishing configuring the whole system, then BIOS will continue to seek an operating system on one of the disks, launch then turn control over to the operating system.

While the AMI BIOS is in control, the Setup program can be activated in the way:

By pressing the <DEL> key when the following message appears briefly at the bottom of the screen during the POST (Power On Self-Test).

5-2 Updating BIOS Setup

- Creating a bootable floppy disk

A、 DOS environment

Insert a 1.44 MB floppy disk into the drive.

At the DOS prompt, type:

format A:/S then press <Enter>.

B、 Microsoft® Windows® environment

Insert a 1.44 MB floppy disk into the floppy disk drive.

From your Windows desktop, click on Start, then select My Computer.

Select the 3 1/2 Floppy Drive icon.

Click File from the menu, and then select Format. A Format 3 1/2 Floppy Disk window appears.

If you are using Windows™, select “Create an MS-DOS startup disk” from the format options field, then click Start.

- Move the latest BIOS file to the bootable floppy disk.
- Using “AMIFLASH.EXE” to update the BIOS

Update the BIOS using the AMIFLASH.EXE utility in DOS environment.

1. Visit the IWILL website (http://www.iwill.net) to download the latest BIOS file for your motherboard. Save the BIOS file to a bootable floppy disk.
2. At the DOS prompt, type the command line:
   AMIFLASH / <filename>
   where “filename” means the latest (or original) BIOS file that you copied to the bootable floppy disk. The screen displays the status of the update process.

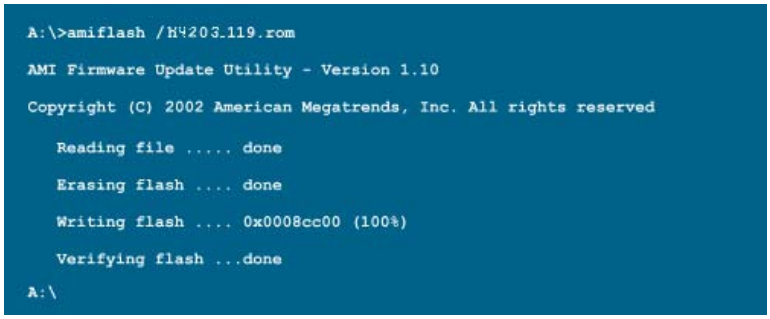
Important

The BIOS information on the screen is for reference only. What you see on your screen may not be exactly the same as shown.

Warning

DO NOT shutdown or reset the system while updating the BIOS! Doing so may cause system boot failure! Make sure to set protection BIT disable before flash BIOS.

3. When the BIOS update process is complete, the utility returns to the DOS prompt.


A:\>amiflash /H4203_119.rom
AMI Firmware Update Utility - Version 1.10
Copyright (C) 2002 American Megatrends, Inc. All rights reserved
Reading file ..... done
Erasing flash .... done
Writing flash 0x0008cc00 (100%)
Verifying flash ...done
A:\

The AMI BIOS is immediately activated when you power on the computer every time. The BIOS reads the system information contained in the CMOS and begins the process of checking out the system and configuring it. After finishing configuring the whole system, then BIOS will continue to seek an operating system on one of the disks, launch then turn control over to the operating system.

While the AMI BIOS is in control, the Setup program can be activated in the way:

By pressing the <DEL> key when the following message appears briefly at the bottom of the screen during the POST (Power On Self-Test).

- Press <DEL> to enter SETUP

5-3 Using Setup

In general, you use the arrow keys to highlight items, press <Enter> to select, press <Esc> to quit. The following table provides more details about how to navigate in the Setup program using the keyboard.

Key	Function
Up Arrow(↑) Key	Move to the previous item
Down Arrow(↓) Key	Move to the next item
Left Arrow(←) Key	Move to the previous item
Right Arrow(→) Key	Move to the next item
Esc key	In the Submenu: Exit the submenu. In the BIOS main category: Quit Without saving changes.
Enter Key	Select the item. A pop-up selection will display on the screen to set the item value.
PgUp Key	Previous page on Scrollable menus or jump to the first interactive item listed
PgDn Key	Next page on Scrollable menus or jump to the last interactive item listed
F1 Key	General Help on Setup navigation keys. Press <F1> key to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press <ESC> key or <F1> key again.
F2/F3 Key	Change colors
F7 Key	Discard changes
F8 Key	Load failsafe defaults
F9 Key	Load optimal defaults
F10 Key	Save and Exit
Home	Go to top of screen
End	Go to bottom of screen
Esc	Exit

IMPORTANT

The BIOS does NOT automatically save values that you have modified. If you do not save your values before you exit the BIOS Setup Utility, all your changes will be lost.

If after making and saving system changes with the BIOS Setup Utility, you discover that your computer is no longer able to boot, the AMI BIOS supports an override, which will reset your system to the Failsafe defaults. If that fails, it is possible to manually clear the present CMOS information through the "Clear CMOS Header" on the motherboard (Refer to Jumper Settings for more information).

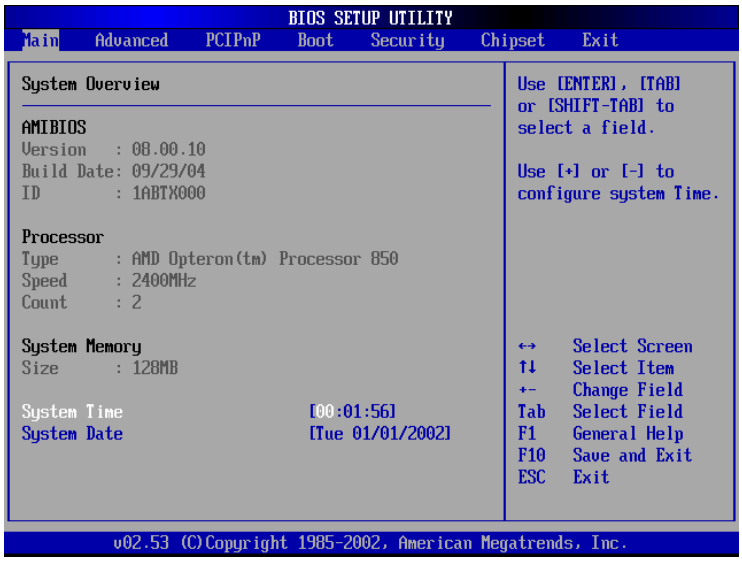
The best advice is to ONLY alter settings which you thoroughly understand. The default settings have been carefully chosen by AMIBIOS to provide the maximum system performance and reliability. Even a slight change to the chipset setup may cause potential and unpredictable failure to the system.

5-4 BIOS supports features

- Multi-processor (8 cores)
- BBS POPup Boot
- SMI (System Management Interface)
- Complete Plug-and-Play options
- PCI 2.3, PCI-X
- ACPI 1.1 & 2.0
- APM1.2
- ATA 66 & 100 &133
- USB 2.0
- 48-bit LBA
- Quick boot support
- Console Redirection
- Event logging
- BIOS flash Protect
- Multi-Level password
- Hardware Monitor
- Bad DIMM detection & re-mapping (chipset dependent)
- SMBIOS 2.3.3 or EBDA logging and reporting
- ECC Memory Detection
- PXE 2.1

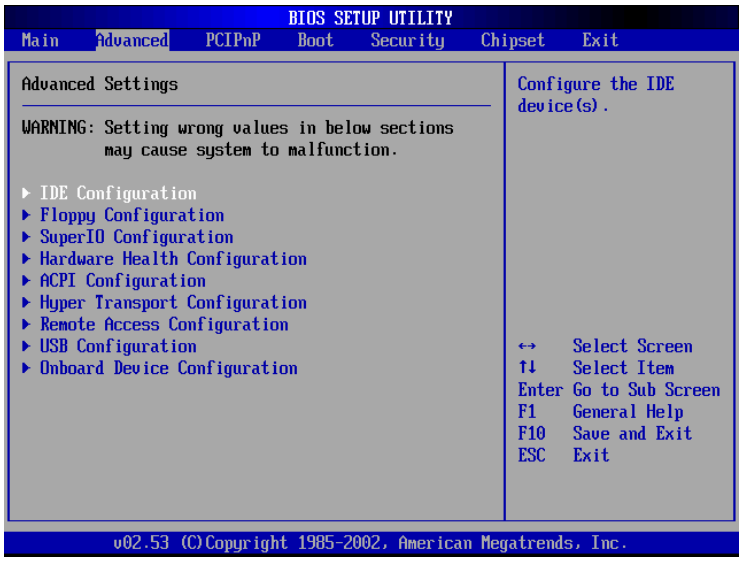
5-5 Main Menu

This is the first screen that is displayed when you enter the BIOS Setup Utility. Each tab lined on the top of the screen represents each different menu. The following picture shows the main menu. Main menu shows the information of BIOS version, date and ID; processor type, speed and count; system size. In addition, system time and date is adjustable using + / - key or number keys.



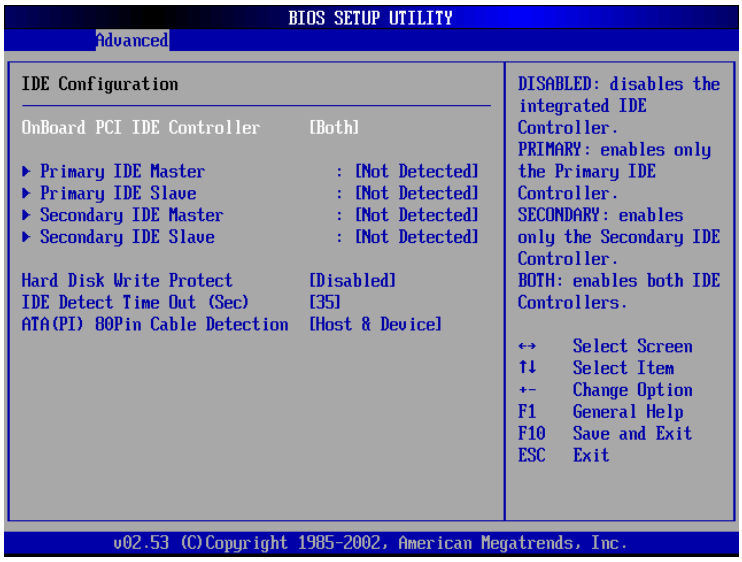
5-6 Advanced Menu

You can make these modifications on the advanced menu.



5-6.1 IDE Configuration Submenu

You can make the selections on IDE Configuration menu.


BIOS SETUP UTILITY
Advanced
IDE Configuration
OnBoard PCI IDE Controller [Both]
▸ Primary IDE Master : [Not Detected]
▸ Primary IDE Slave : [Not Detected]
▸ Secondary IDE Master : [Not Detected]
▸ Secondary IDE Slave : [Not Detected]
Hard Disk Write Protect [Disabled]
IDE Detect Time Out (Sec) [35]
ATA(PI) 80Pin Cable Detection [Host & Device]
DISABLED: disables the integrated IDE Controller.
PRIMARY: enables only the Primary IDE Controller.
SECONDARY: enables only the Secondary IDE Controller.
BOTH: enables both IDE Controllers.
↔ Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
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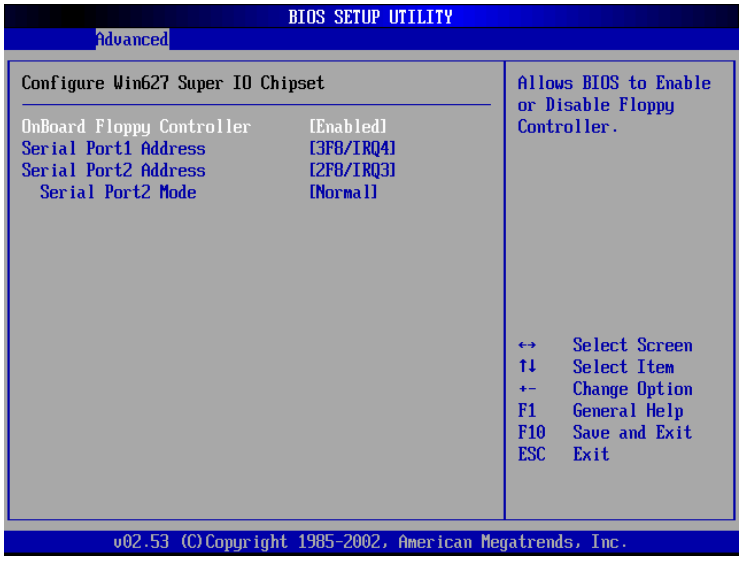
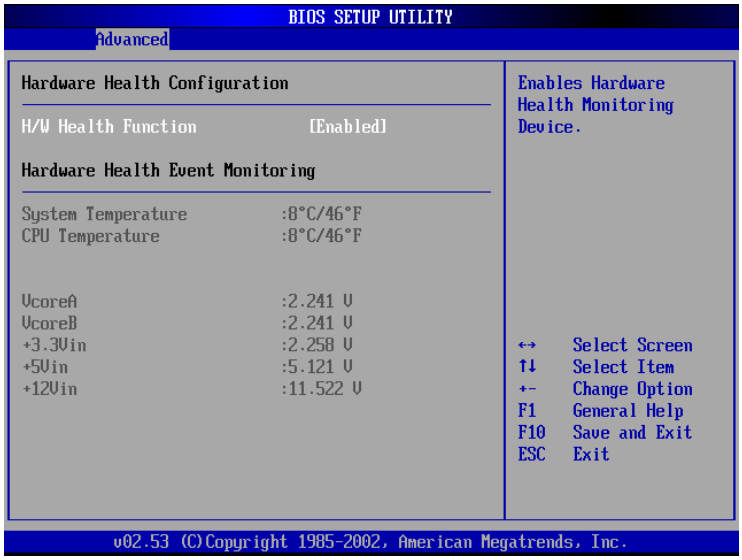
Feature	Options	Description
OnBoard PCI IDE Controller	Disable Primary Secondary Both	Disable: disable the integrated IDE controller Primary: enable only the Primary IDE controller Secondary: enable only the Secondary IDE controller Both: enable both IDE controllers
Hard Disk Write Protect	Disable Enable	Disable/Enable the hard disk write protection. This will be effective only device is accessed through BIOS
IDE Detect Time out (sec)	0, 5, 10, 15, 20, 25, 30, 35	Select the time out value for detecting ATA/ATAPI device
ATA (PI) 80Pin Cable Detection	Host & Device Host Device	Select the mechanism for detecting 80 pin cable

5-6.2 Floppy Configuration Submenu

5-6.3 Super I/O Configuration Submenu



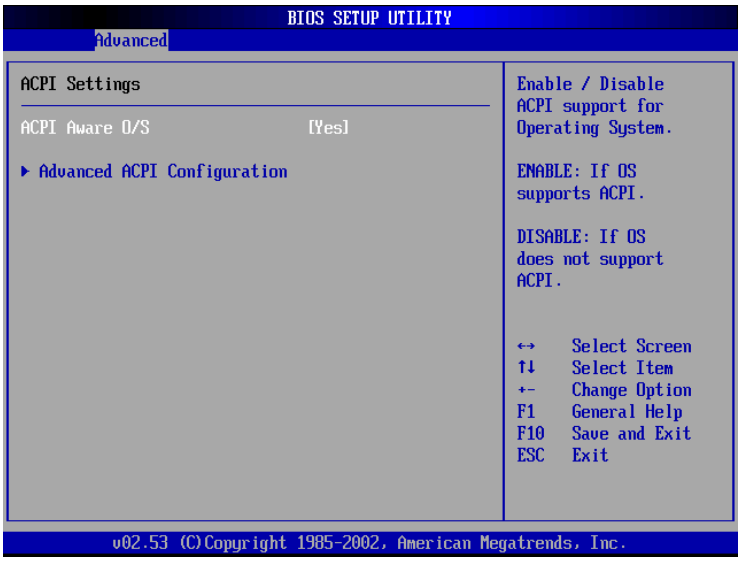
5-6.4 Hardware Health Configuration Submenu



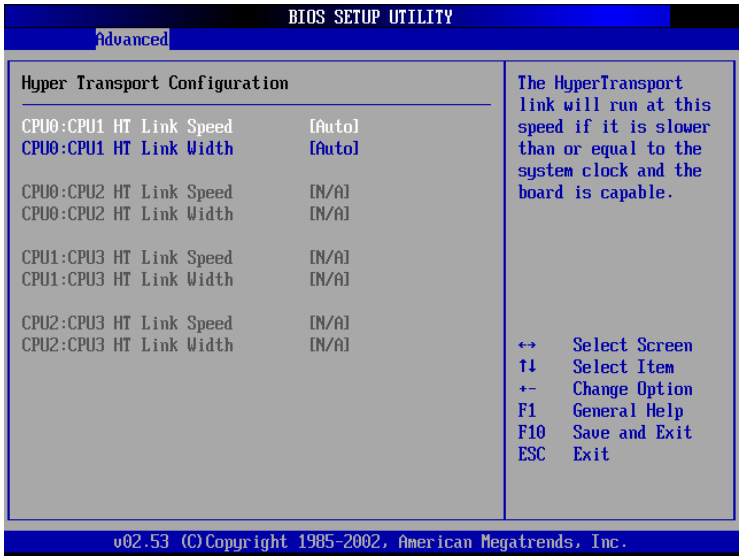
IMPORTANT

In the BIOS menu, you will not get the hardware health information because the BMC solution will take over this job and all information will be reported and shown in BMC section.

5-6.5 ACPI Setting Submenu

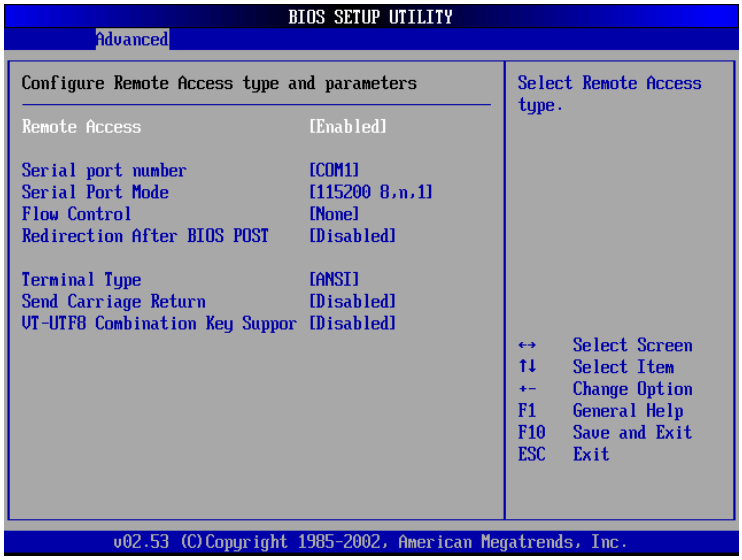


5-6.6 Hyper Transport Configuration


BIOS SETUP UTILITY
Advanced
Hyper Transport Configuration
CPU0:CPU1 HT Link Speed [Auto]
CPU0:CPU1 HT Link Width [Auto]
CPU0:CPU2 HT Link Speed [N/A]
CPU0:CPU2 HT Link Width [N/A]
CPU1:CPU3 HT Link Speed [N/A]
CPU1:CPU3 HT Link Width [N/A]
CPU2:CPU3 HT Link Speed [N/A]
CPU2:CPU3 HT Link Width [N/A]
The HyperTransport link will run at this speed if it is slower than or equal to the system clock and the board is capable.
↔ Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
v02.53 (C)Copyright 1985-2002, American Megatrends, Inc.

To set up the hyper transport speed and bandwidth, you can adjust over this menu. The incorrect manipulation will impede the system running.

5-6.7 Remote Access Configuration Submenu



5-6.8 USB Configuration Submenu

Advanced
USB Configuration
Module Version - 2.22.5-6.4
USB Devices Enabled :
None
Legacy USB Support [Enabled]
Enables support for legacy USB. AUTO option disables legacy support if no USB devices are connected.
↔ Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
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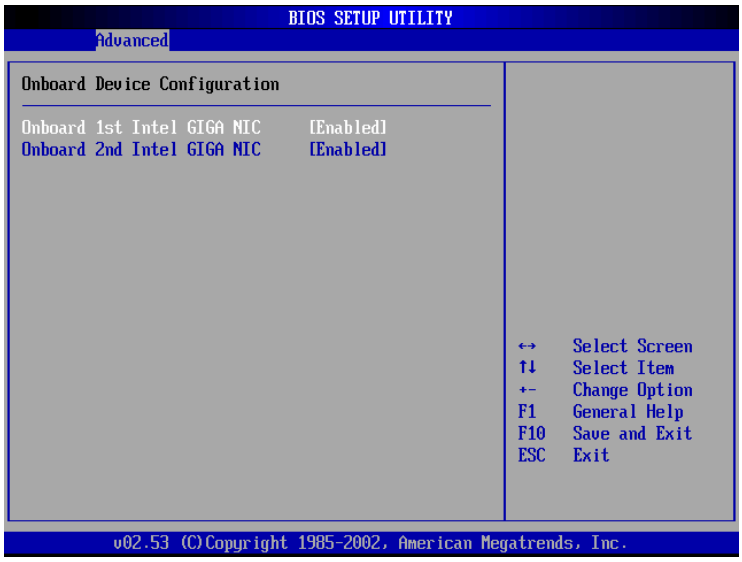
5-6.9 Onboard Device Configuration



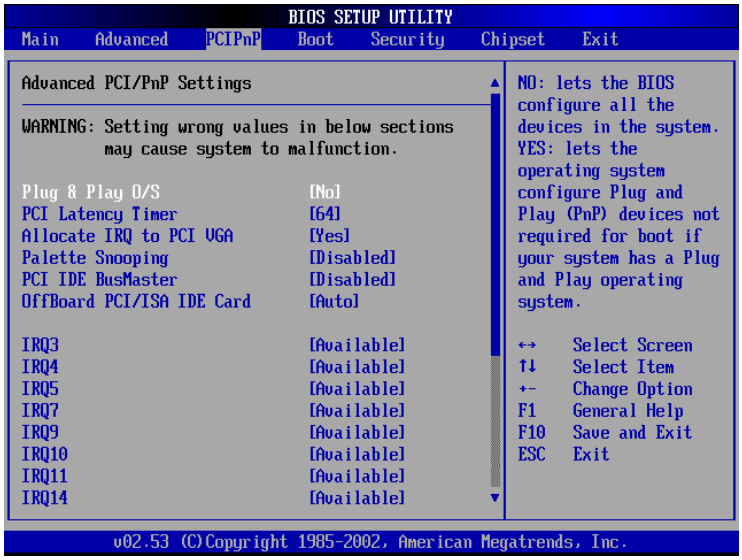
You can make the selections on Onboard Device Configuration.

Feature	Options	Description
Onboard 1st Intel GIGA NIC	Enabled Disabled	
Onboard 2nd Intel GIGA NIC	Enabled Disabled	

5-6.10 The Advanced setting description

Feature	Options	Description
Floppy Configuration	Disabled 5 1/2” 360 KB 5 1/2” 1.2 MB 3 1/2” 720 KB 3 1/2” 1.44 MB 3 1/2” 2.88 MB	Select Floppy A or Floppy B and then selects floppy-diskette type installed in your system.
Hardware Health Configuration	Disable/Enable hardware health function and hardware thermal throttling	Enable/Disable hardware health function Thermal throttling allows the user to reduce CPU duty cycle to a user defined percentage when the temperature reaches a user defined value H/W health event
ACPI Configuration	ACPI Aware O/S Yes/No	Enable: O/S supports ACPI Disable: O/S doesn’t support ACPI
Hyper Transport Configuration	CPU0 : CPU1 HT Link Speed/Width	Hyper Transport link speed/width is adjustable
Remote Access Configuration	Disable Serial	Selects Remote Access type
USB Configuration	Legacy USB Support Disabled/Enabled/Auto USB Mass Storage Device Configuration	Enable support for legacy USB Auto option disables legacy support it no USB device connected Configure the USB mass storage class devices
OnBoard Device Configuration	OnBoard SATA Controller / SATA Mode / INTEL NIC Enable / Disable	N / A

5-7 PCI PnP Menu


BIOS SETUP UTILITY
Main Advanced PCIPnP Boot Security Chipset Exit
Advanced PCI/PnP Settings
WARNING: Setting wrong values in below sections may cause system to malfunction.
Plug & Play O/S [No]
PCI Latency Timer [64]
Allocate IRQ to PCI VGA [Yes]
Palette Snooping [Disabled]
PCI IDE BusMaster [Disabled]
OffBoard PCI/ISA IDE Card [Auto]
IRQ3 [Available]
IRQ4 [Available]
IRQ5 [Available]
IRQ7 [Available]
IRQ9 [Available]
IRQ10 [Available]
IRQ11 [Available]
IRQ14 [Available]
NO: lets the BIOS configure all the devices in the system. YES: lets the operating system configure Plug and Play (PnP) devices not required for boot if your system has a Plug and Play operating system.
↔ Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
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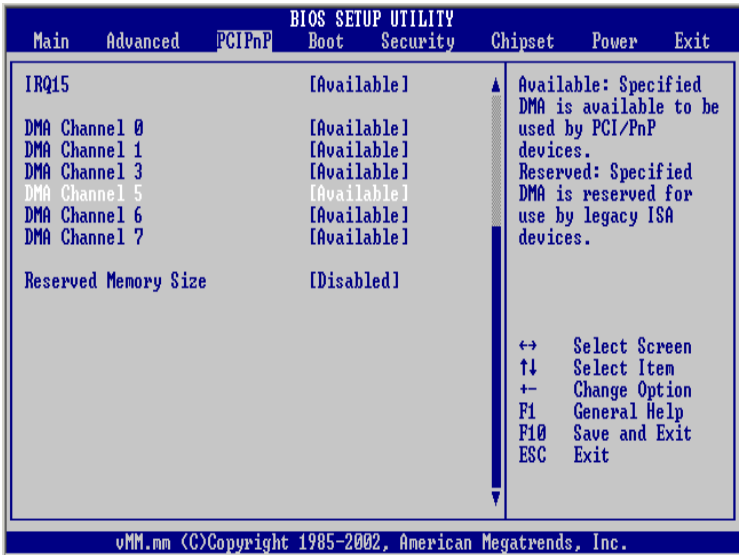
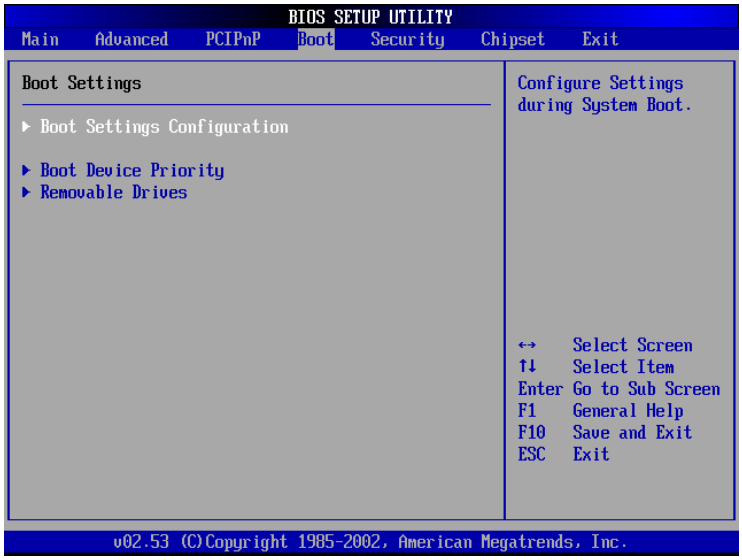
PCI PnP Menu 1


BIOS SETUP UTILITY
Main Advanced PCIPnP Boot Security Chipset Power Exit
IRQ15 [Available]
DMA Channel 0 [Available]
DMA Channel 1 [Available]
DMA Channel 3 [Available]
DMA Channel 5 [Available]
DMA Channel 6 [Available]
DMA Channel 7 [Available]
Reserved Memory Size [Disabled]
Available: Specified DMA is available to be used by PCI/PnP devices. Reserved: Specified DMA is reserved for use by legacy ISA devices.
↔ Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
vMM.mm (C)Copyright 1985-2002, American Megatrends, Inc.

PCI PnP Menu 2

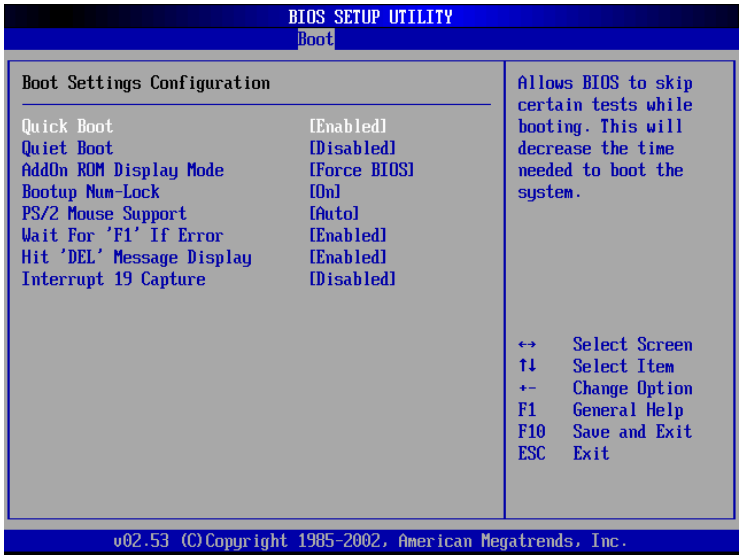
Feature	Options	Description
Plug & Play O/S	Yes No	Yes: lets the O/S configure PnP devices not required for boot if your system has a Plug and Play O/S
PCI Latency Timer	32, 64, 96, 128, 160, 192, 224, 248	Value in units of PCI clocks for PCI device latency timer register
Allocate IRQ to PCI VGA	Yes No	Yes: Assign IRQ to PCI VGA card if card requests IRQ No: Doesn't assign IRQ To PCI VGA cars even if card requests IRQ
Palette Snooping	Enabled Disabled	Enabled: informs the PCI devices that an ISA graphics device is installed in the system so the card will function correctly
PCI IDE BusMaster	Enabled Disabled	Enabled: BIOS uses PCI busmastering for reading/writing to IDE drives
Offboard PCI/ISA IDE card	Auto PCI Slot1 PCI Slot2 PCI Slot3 PCI Slot4 PCI Slot5	Some PCI IDE cards may require this to be set to the PCI slot number that is holding the card
IRQ3~IRQ15	Available Reserved	Available: specified IRQ is available to be used by PCI/PnP devices Reserve: specified IRQ is reserved for use by legacy ISA devices
DMA Channel 0, 1, 3, 5, 6, 7	Available Reserved	Available: specified DMA is available to be used by PCI/PnP devices Reserve: specified DMA is reserved for use by legacy ISA devices
Reserved Memory Size	Disabled 16K 32K 64K	Size of memory block to reserve for legacy ISA devices

5-8 Boot Menu



Feature	Description
Boot Device Priority	Specify the boot device priority sequence
Hard Disk Drives	Specify the boot device priority sequence from available hard drives
Removable Drives	Specify the boot device priority sequence from available removable drives
CD / DVD Drives	Specify the boot device priority sequence from available ATAPI CDROM drives

5-8.1 Boot Settings Configuration Submenu


BIOS SETUP UTILITY
Boot
Boot Settings Configuration
Quick Boot [Enabled]
Quiet Boot [Disabled]
AddOn ROM Display Mode [Force BIOS]
Bootup Num-Lock [On]
PS/2 Mouse Support [Auto]
Wait For 'F1' If Error [Enabled]
Hit 'DEL' Message Display [Enabled]
Interrupt 19 Capture [Disabled]
Allows BIOS to skip certain tests while booting. This will decrease the time needed to boot the system.
↔ Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
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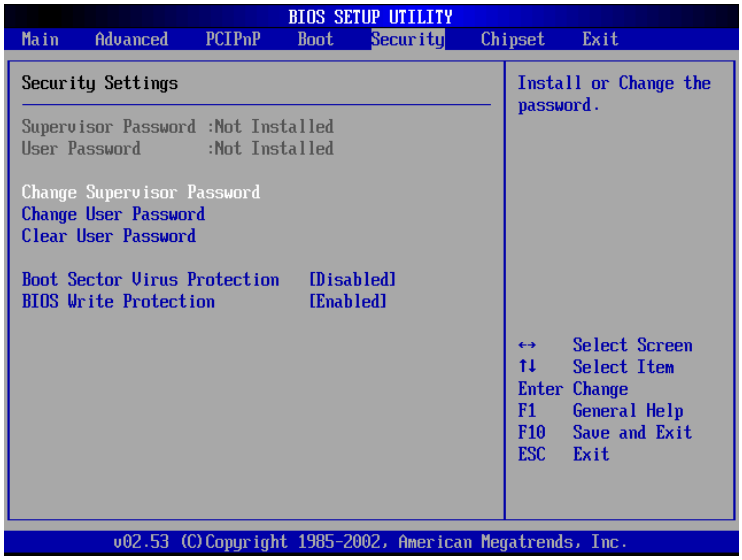
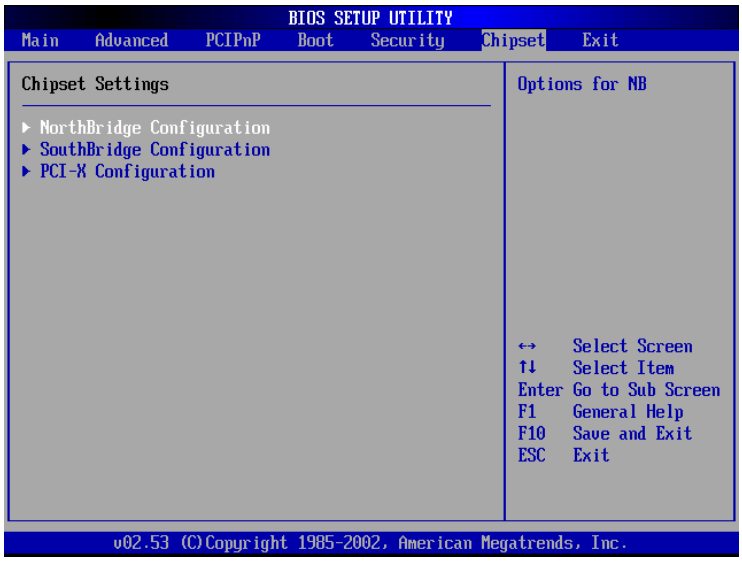
Feature	Options	Description
Quick Boot	Disabled Enabled	Allow BIOS to skip tests while booting
Quiet Boot	Disabled Enabled	Disabled: Display normal POST messages Enabled: Display OEM logo
Add-on ROM Display Mode	Force BIOS Keep Current	Set display mode for option ROM
Bootup Num-Lock	Off On	Select power on state for Num-Lock
PS/2 Mouse Support	Disabled Enabled	Select support for PS/2 mouse
Wait for " F1 " if error	Disabled Enabled	Wait for F1 key to be pressed if error occurs
Hit " DEL " Message Display	Disabled Enabled	Display " Press DEL to run Setup " in POST
Interrupt 19 Capture	Disabled Enabled	Enabled: allows option ROMs to trap interrupt 19

5-9 Security Menu

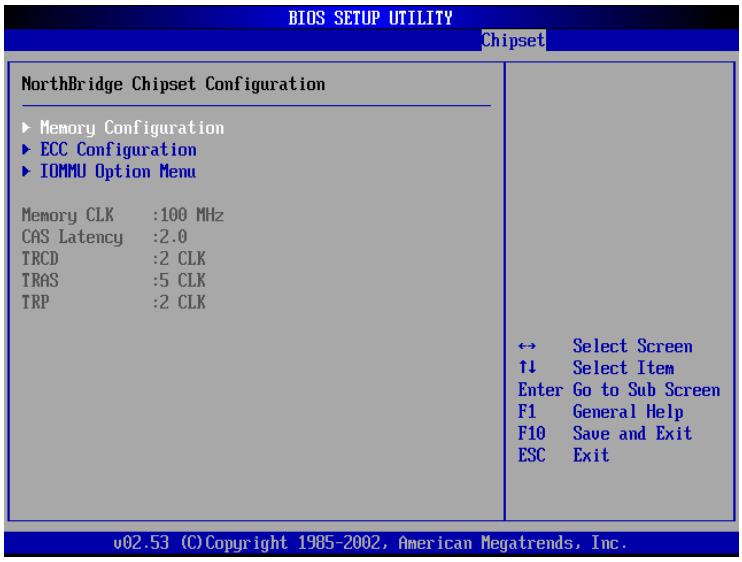


Feature	Options	Description
Change User Password		Install or change the password
Clear User Password		Setup: check password while invoking setup Always: check password while invoking setup as well as on each boot
Boot Sector Virus Protection	Disabled Enabled	Enable/Disable boot sector virus protection
BIOS Write Protection	Disabled Enabled	N / A

5-10 Chipset Settings Menu

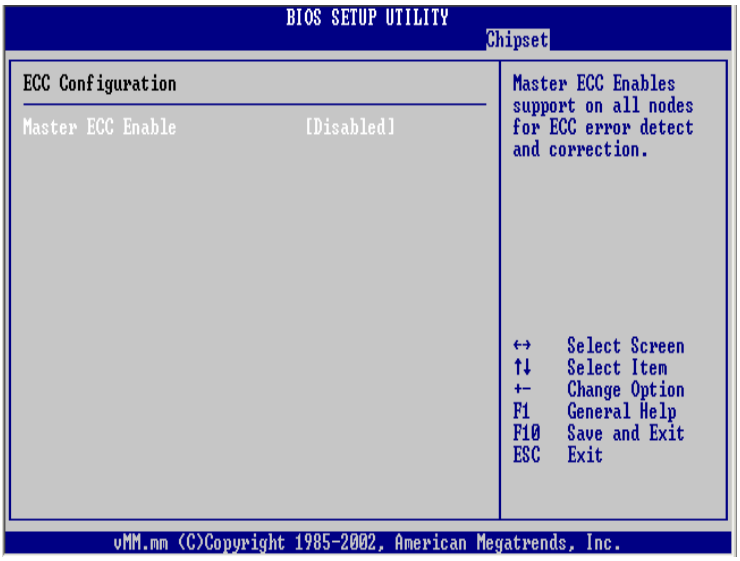


5-10.1 NorthBridge Chipset Configuration Submenu



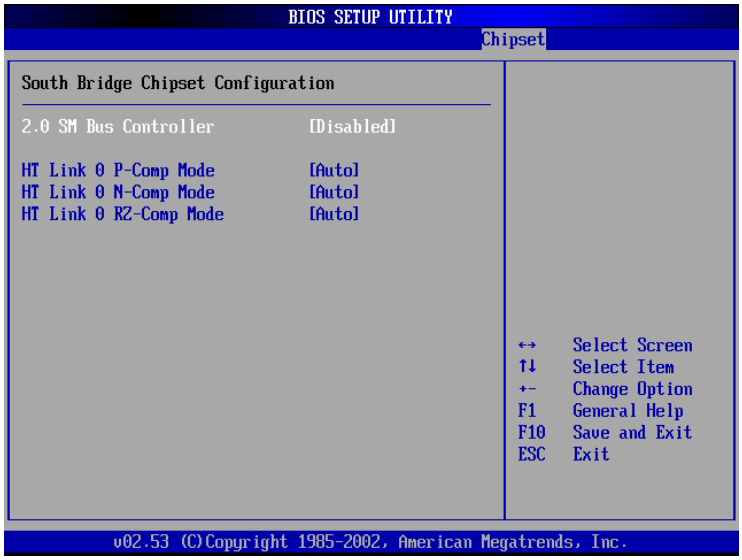
Northbridge Chipset controls the system memory configuration. Although AMD processors integrate the memory control function, you could still configure memory setting on this BIOS menu.

5-10.2 ECC Configuration Submenu



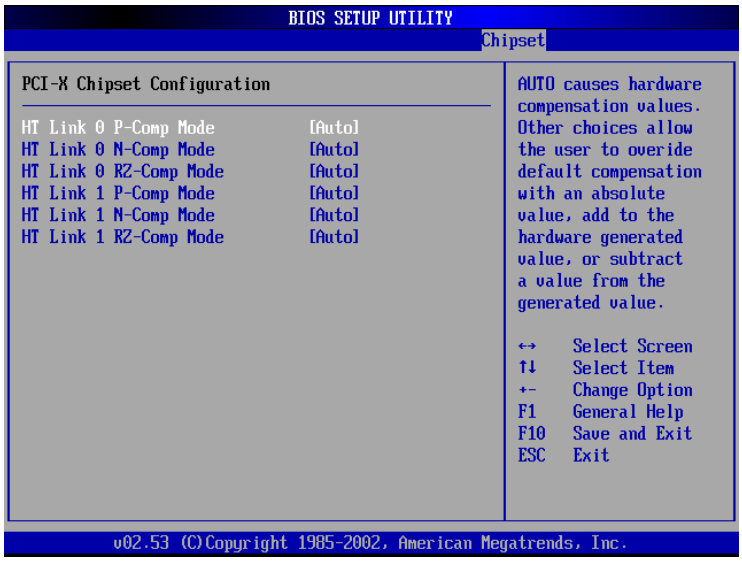
Feature	Options	Description
Master ECC Enable	Disabled Enabled	Master ECC Enables support on all nodes for ECC error detect and correction

5-10.3 South Bridge Configuration Submenu



Feature	Options	Description
2.0 SM Bus Controller	Disabled Enabled	
HT Link 0 P-Comp Mode HT Link 0 N-Comp Mode HT Link 0 RZ-Comp Mode	Auto Data Calcomp + Data Calcomp - Data	Auto causes hardware compensation vales. Other choices allow the user to override default compensation with an absolute value, add to the hardware generated value, or subtract a value from the generated value

5-10.4 PCI-X Configuration


BIOS SETUP UTILITY
Chipset
PCI-X Chipset Configuration
HT Link 0 P-Comp Mode [Auto]
HT Link 0 N-Comp Mode [Auto]
HT Link 0 RZ-Comp Mode [Auto]
HT Link 1 P-Comp Mode [Auto]
HT Link 1 N-Comp Mode [Auto]
HT Link 1 RZ-Comp Mode [Auto]
AUTO causes hardware compensation values. Other choices allow the user to overide default compensation with an absolute value, add to the hardware generated value, or subtract a value from the generated value.
↔ Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
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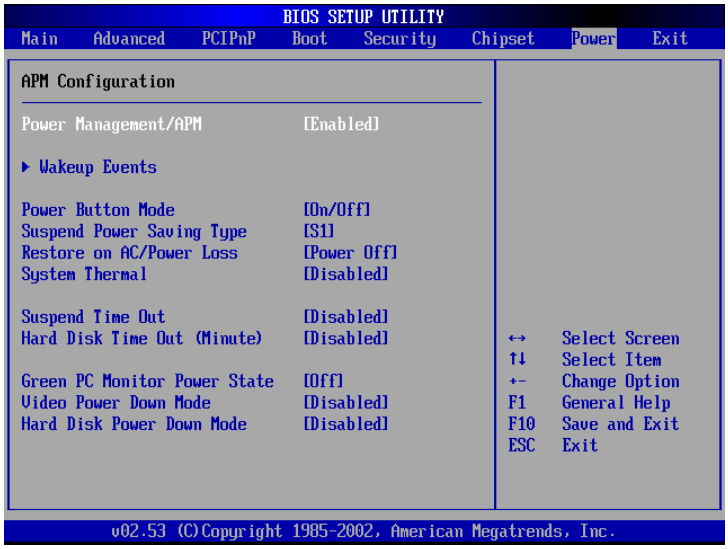
Feature	Options	Description
HT Link 0 P-Comp Mode	Auto Data Calcomp+Data Calcomp-Data	Auto causes hardware compensation values.
HT Link 0 N-Comp Mode	Auto Data Calcomp+Data Calcomp-Data	Auto causes hardware compensation values.
HT Link 0 NZ-Comp Mode	Auto Data Calcomp+Data Calcomp-Data	Auto causes hardware compensation values.
HT Link 1 P-Comp Mode	Auto Data Calcomp+Data Calcomp-Data	Auto causes hardware compensation values.
HT Link 1 N-Comp Mode	Auto Data Calcomp+Data Calcomp-Data	Auto causes hardware compensation values.
HT Link 1 NZ-Comp Mode	Auto Data Calcomp+Data Calcomp-Data	Auto causes hardware compensation values.

5-11 Power Menu


BIOS SETUP UTILITY
Main Advanced PCIPnP Boot Security Chipset Power Exit
APM Configuration
Power Management/APM [Enabled]
▸ Wakeup Events
Power Button Mode [On/Off]
Suspend Power Saving Type [S1]
Restore on AC/Power Loss [Power Off]
System Thermal [Disabled]
Suspend Time Out [Disabled]
Hard Disk Time Out (Minute) [Disabled]
Green PC Monitor Power State [Off]
Video Power Down Mode [Disabled]
Hard Disk Power Down Mode [Disabled]
↔ Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
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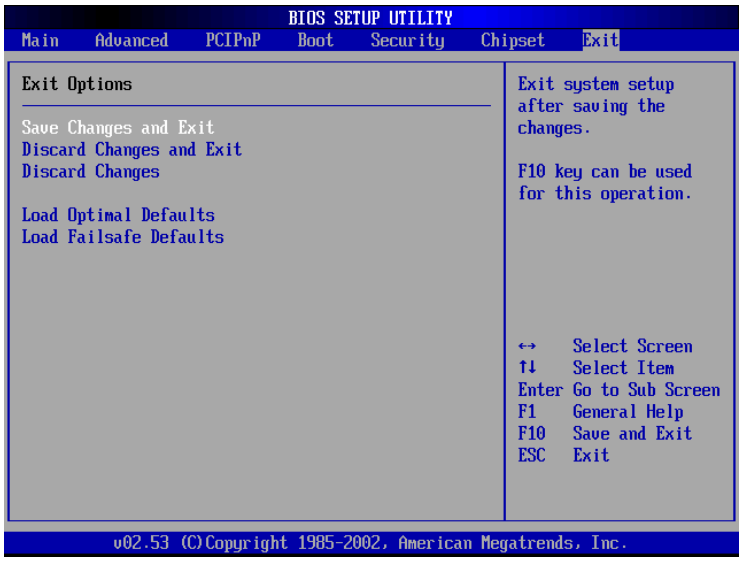
5-12 Exit Menu


BIOS SETUP UTILITY
Main Advanced PCIPnP Boot Security Chipset Exit
Exit Options
Save Changes and Exit
Discard Changes and Exit
Discard Changes
Load Optimal Defaults
Load Failsafe Defaults
Exit system setup after saving the changes.
F10 key can be used for this operation.
↔ Select Screen
↑↓ Select Item
Enter Go to Sub Screen
F1 General Help
F10 Save and Exit
ESC Exit
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Feature	Description
Save Changes and Exit	Exit system setup after saving the changes F10 key can be used for this operation
Discard Changes and Exit	Exit system setup without saving the changes ESC key can be used for this operation
Discard Changes	Discard changes done so far to any of the setup question F7 key can be used for this operation
Load Optimal Defaults	Load optimal default values for all the setup questions F9 key can be used for this operation
Load Failsafe Defaults	Load Failsafe default values for all the setup questions F8 key can be used for this operation

Chapter 6 Technology Support

If a problem arises with yours system during Installation or OS operating, you should ask your dealer for help first as your system has most likely be configured by them. They always have the best idea and quick response for your symptoms. If your dealer is near to your locations, you should bring your system to them to have it quickly serviced instead of attempting to solve the problem by yourself.

1. Go to IWILL® website at www.iwill.net and navigate to this product page which contains links to product updates such as Jumper settings or BIOS updates.
2. FAQ sections on IWILL® Website are often helpful since other user's questions are often your own.
3. Email us at: support@iwill.net and we will try to answer your questions within 24

Three years Warranty

If any problems occur during the product's warranty period, consult your system vendor or distributor before contacting IWILL®. The warranty covers normal customer use of the product. The warranty does not cover damages sustained during shipping or failure due to alteration, misuse, abuse, or improper maintenance of the unit.

Appendix A

H4204 SERIES Server Standard Cables inside the Chassis

One Front Board Cable

One USB Cable

One LED Signal Connect Cable

One CD-ROM Cable

One LAN Cable

One SCSI Cable